RLM G5

Service Manual

R9010020

IVS TECHNOLOGIES
www.ivstechnologies.com
ZI La Montjoie
1, rue des Drapiers
93210 LA PLAINE SAINT-DENIS
Tél. +33 (0)1 55 93 48 48
Fax:+33 (0)1 55 93 48 49

Barco nv Events
Noordlaan 5, B-8520 Kuurne
Phone: +32 56.36.89.70
Fax: +32 56.36.88.24
E-mail: events@barco.com
Visit us at the web: www.barco.com

Printed in Belgium

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This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

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1. GENERAL INFORMATION

1.1 RLM R5 Performer

Commercial Brochure

See next pages for contents.

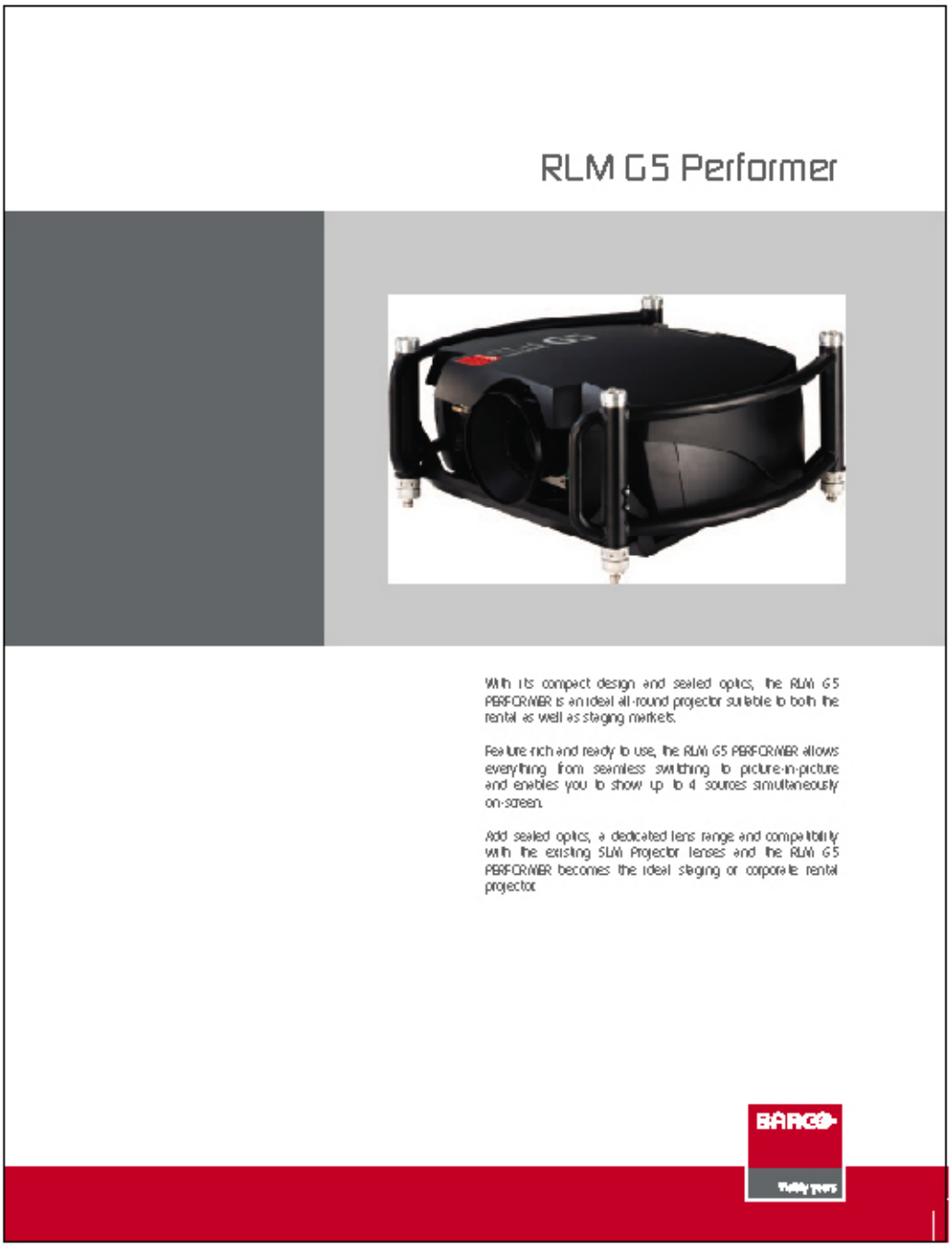

RLM G5 Performer
With its compact design and sealed optics, the RLM G5 PERFORMER is an ideal all-round projector suitable to both the rental as well as staging markets.
Feature rich and ready to use, the RLM G5 PERFORMER allows everything from seamless switching to picture-in-picture and enables you to show up to 4 sources simultaneously on-screen.
Add sealed optics, a dedicated lens range and compatibility with the existing SLM Projector lenses and the RLM G5 PERFORMER becomes the ideal staging or corporate rental projector.
BARCO

Image 1-1
Front page brochure RLM G5P

RLM G5 Performer

With its compact design and sealed optics, the RLM G5 PERFORMER is an ideal all-round projector suitable to both the rental as well as staging markets.

Feature-rich and ready to use, the RLM G5 PERFORMER allows everything from seamless switching to picture-in-picture and enables you to show up to 4 sources simultaneously on-screen.

Add sealed optics, a dedicated lens range and compatibility with the existing SLM Projector lenses and the RLM G5 PERFORMER becomes the ideal staging or corporate rental projector.

Ready for the Road

The RLM G5 PERFORMERs sealed optics, which makes it dust and smoke resistant allows it to maintain optimal performance in normal rental environments while also offering protection in harsh staging environments where smoke machines are frequently used.

The RLM G5 PERFORMER comes with a dedicated rental frame which facilitates handling, stacking and truss-mounting. The special frame also offers protection to the projector whilst making it easy to handle and carry.

With the renowned SLM interlocking system, the RLM G5 PERFORMER can be snap-locked together with another unit, offering double brightness and redundancy, perfect for demanding events.

The RLM G5 PERFORMER has an extensive range of mounting points and slots to accommodate different clamps and adapt to various truss systems and dimensions.

Advanced Image Processing

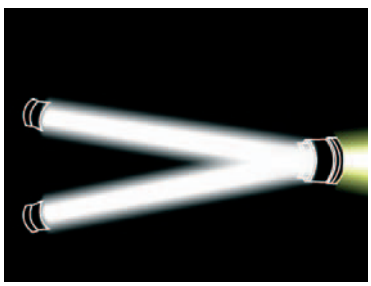
The RLM G5 PERFORMER allows seamless transitions from source to source, with special effects such as dissolve, horizontal and vertical blind, box in and out, etc ...

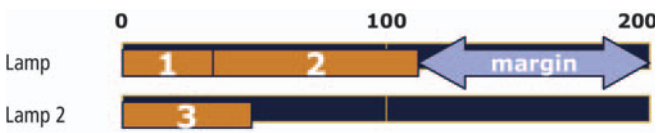
Extensive PIP capabilities which offer up to 4 sources on-screen simultaneously while also allowing you to position and resize windows via an intuitive on-screen menu.
Save and load your preferred settings at any time.

Pre-load your company logo and display it during intermission or when there is no signal.

Optical System

Featuring a dual lamp system with auto-sensing, the RLM G5 PERFORMERÕs optical system also allows smart lamp switching in single lamp mode to make optimum use of available lamp life.





With a full lens range accommodating any requirement, the RLM G5 PERFORMER is also compatible with the SLM high brightness lens range by using the TLD/RLM lens adapter.

SLM lenses	Throw ratio on SLM	Throw ratio on RLM	Order Information
¥ TLD HB (0.8)	0.8 : 1	1.0 : 1	R9842040
¥ TLD HB (1.6 - 2.0)	1.6 - 2.0 : 1	2.0 - 2.5 : 1	R9842060
¥ TLD HB (2.0 - 2.8)	2.0 - 2.8 : 1	2.5 - 3.5 : 1	R9842080
¥ TLD HB (2.8 - 5.0)	2.8 - 5.0 : 1	3.5 - 6.3 : 1	R9842100
¥ TLD HB (5.0 - 8.0)	5.0 - 8.0 : 1	6.3 - 10.0 : 1	R9842120

RLM G5 Performer specifications

¥Light Output (ANSI)**	4000	
¥Resolution	1024 x 768 (native) 1600 x 1200 (max)	
¥Contrast Ratio - full field	900 : 1	
¥Brightness Uniformity	90%	
¥Lamp	2 x 250 W UHP	
¥Lamp Lifetime (max)	1500 Hrs	
¥Lamp Lifetime (typ)	1000 Hrs	
¥ Noise Level (dba)	20¡C (68¡F) 40¡C (104¡F)	< 43 < 50
¥Max. Ambient Temp	40¡C (104¡F)	
¥Mains Voltage	92-240 V	
¥Power Consumption	1000 W	
¥Weight	25 kg (56 lbs)	
¥Weight Frame	5 kg (11 lbs)	

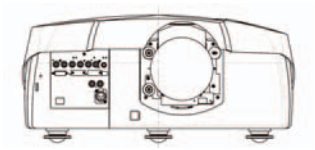
FEATURES	
¥Seamless Source Switching	Standard: box-in/out, etc ...
¥ScenergiX	Standard horizontal and vertical electronic edge blending
¥Network Connection	Optional
¥Sealed DLP Core	Standard
¥Advanced Picture in Picture	Up to 4 sources simultaneously (2 data, 1 video and 1 SDI)
¥Digital Zoom	Standard
¥Light Shutter	Standard
¥Built-in Radio Remote Transceiver	Optional

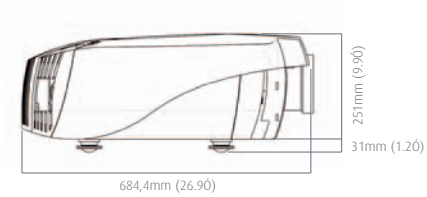
ORDER INFORMATION	
¥Projector Body	R9010020
¥Spare Dual Lamp (including housing)	R9841880
¥TLD/RLM lens adapter	R9832650

INPUTS	
¥1x Configurable 5-Wire (BNC)	Composite Video, S-video, Component Video, RGBHV, RGBS, RGsB
¥1x Composite Video (BNC)	Up to 7 Composite Videos, using all connectors on top input board
¥1x S-Video (4-pin mini-DIN)	Up to 3 S-Videos when combining BNCs
¥1x Analog RGB (D15 connector)	
¥1x SDI	With active loop-through
¥1x DVI (Digital Visual Interface)	
¥1x RS-232	
¥1x XLR	For 2-way communication using rugged remote

** Optical specifications measured with RLD (4.5 - 7 : 1), on axis at 220V

¥ Dimensions





LENSES

RLD - Type	Order information
¥ RLD (0.8)	R9832640
¥ RLD (1.5 - 1.8)	R9832642
¥ RLD (1.8 - 2.25)	R9832643
¥ RLD (2.25 - 3.0)	R9832644
¥ RLD (3.0 - 4.5)	R9832645
¥ RLD (4.5 - 7.0)	R9832646

Barco
Noordlaan 5, 8520 Kuurne - Belgium
Tel. +32 56 36 89 70 - Fax + 32 56 36 88 24

3240 Town Point Drive - Kennesaw, GA 30144
Tel. +1 770 218 3200
Fax +1 770 218 3250

email: sales.events@barco.com

Ref. no. R599608 - January Ô04

Barco Projection Systems is an ISO 9001 registered company.
The information and data given are typical of the equipment described.
However any individual item is subject to change without notice.

2. SAFETY

2.1 Safety Instructions

WARNING: Before Removing/Replacing any projector components, turn off the Main Power Switch and unplug the Main AC power cable.

Safety Instructions

1. Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:
   a) Be sure that no built-in protective devices are defective and/or have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, insulating materials, barriers, covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.
   b) Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) excessively wide cabinet ventilation slots, and (2) an improperly fitted and/or incorrectly secured cover panels.
   c) Leakage Current Hot Check. With the instrument completely reassembled, plug the AC line cord directly into a 220 V AC outlet (Do not use an isolation transformer during this test). Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.0 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.). especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 1.5 mA. Reverse the instrument power cord plug in the outlet and repeat test. ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING ACCESSORIES.

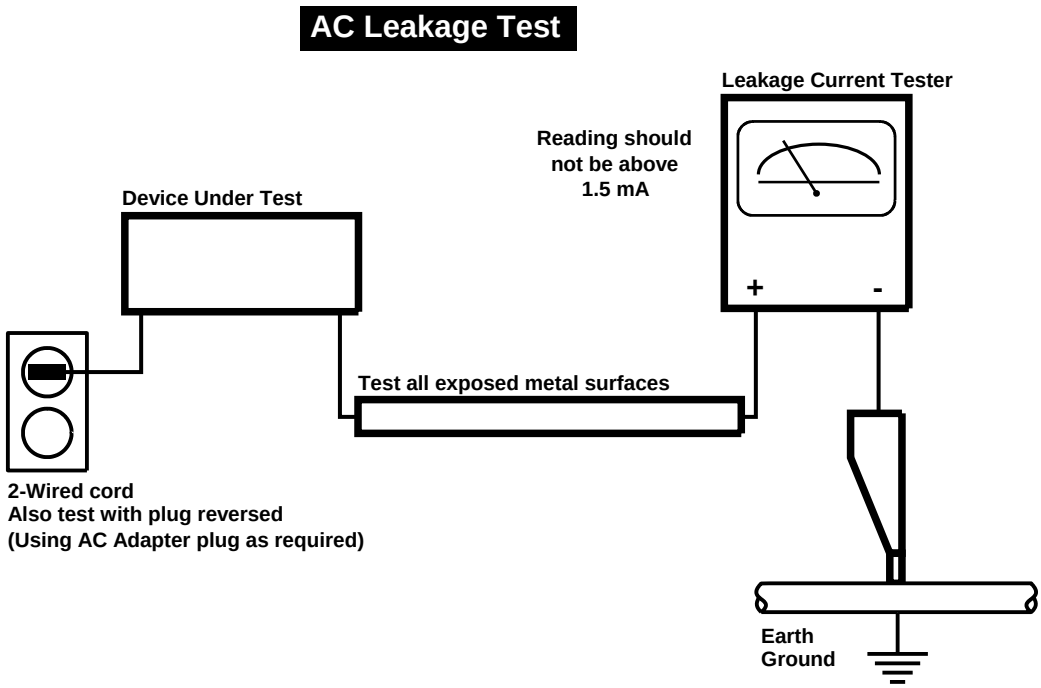


Image 2-1
AC Leakage Test

   d) Ultraviolet Radiation exposure - Warning: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if not operated in enclosed fixtures. DO NOT operate this lamp in a fixture with a missing or broken lens cover.
   e) Ozone: Operating lamp generates ozone gas which is harmful to the respiratory system. Therefore the lamp should be operated in adequately ventilated equipment.
2. Read and comply with all caution and safety-related notes on or inside the projector cabinet or on the projector chassis, or on the picture tube.
3. Design Alteration Warning - Do not alter or add to the mechanical or electrical design of this apparatus. Design alterations and additions, including, but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this apparatus and create a hazard to the user. Any design alterations or additions may void the manufacturer's warranty and may make you, the servicer responsible for personal injury or property damage resulting therefrom.
4. Lamp explosion Protection Warning – The lamp in this projector operates with a high internal pressure and there is a slight risk that the lamp may explode, particularly if it is used beyond its rated life of 1000 hours. Do not remove, install, or otherwise handle the lamp in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while lamps are handled. Keep the lamp away from your body. For continued explosion protection, replace the lamp only with one of the same type number. Always replace the lamp before the rated life time.

5. Hot Chassis Warning - This projector chassis has two ground systems: the primary ground system is formed by the negative voltage of the rectified mains (power) and is only used as a reference in primary circuits; the secondary ground system is connected to earth ground via the earth conductor in the mains (power) lead. Separation between primary and secondary circuits is performed by the safety isolation transformers. Components bridging this transformers are also safety components and must never be defeated or altercated. All user-accessible conductive parts must be connected to earth ground, or are kept at SELV (Safety Extra Low Voltage).
6. Observe original lead dress. Always inspect in all areas for pinched, out-of-face, or frayed wiring. Do not change spacing between components, and between components and the printed-circuit board. Check AC power cord for damage. Take extra care to assure correct lead dress in the following areas:
   a) near sharp edges
   b) near thermally hot parts - be sure that leads and components do not touch thermally hot parts
   c) the AC supply
   d) high voltage
7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
8. PRODUCT SAFETY NOTICE - Many electrical and mechanical parts have special safety-related characteristics some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part in BARCO service data parts list might create shock, fire, and/or other hazards. Product Safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current BARCO service literature.
9. Do not spray chemical on or near this instrument or any of its assemblies.
10. Electrostatically Sensitive (ES) Devices Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity:
    a) Immediately before handling any semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available high impedance discharging wrist strap device.
    b) After removing an electrical assembly equipped with ES devices, place the assembly on a static dissipative surface such as a 3M No 8210 table mat, to prevent electrostatic charge buildup or exposure of the assembly.
    c) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
    d) Do not remove a replacement ES device from its protective package until immediately before you are ready to install it (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
    e) Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed. CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
    f) Minimize bodily motions when handling unpacked replacement ES devices (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

3. SAFETY SYMBOLS

3.1 Overview used Safety Symbols

Overview

	The lightning flash and arrowhead symbol within the equilateral triangle indicates non-insulated “dangerous voltage” within the projector’s enclosure that may be sufficient magnitude to constitute a risk of electric shock.
	The exclamation point within the equilateral triangle indicates related operating/maintenance instructions in the documentation accompanying the projector.
WARNING	The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.
CAUTION	The CAUTION sign denotes a hazard. It calls the attention to an operating procedure, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.
or	Indicate earth (ground) terminal

4. BLOCK DIAGRAM RLM R5 PERFORMER

4.1 Simplified Block Diagram

Block diagram

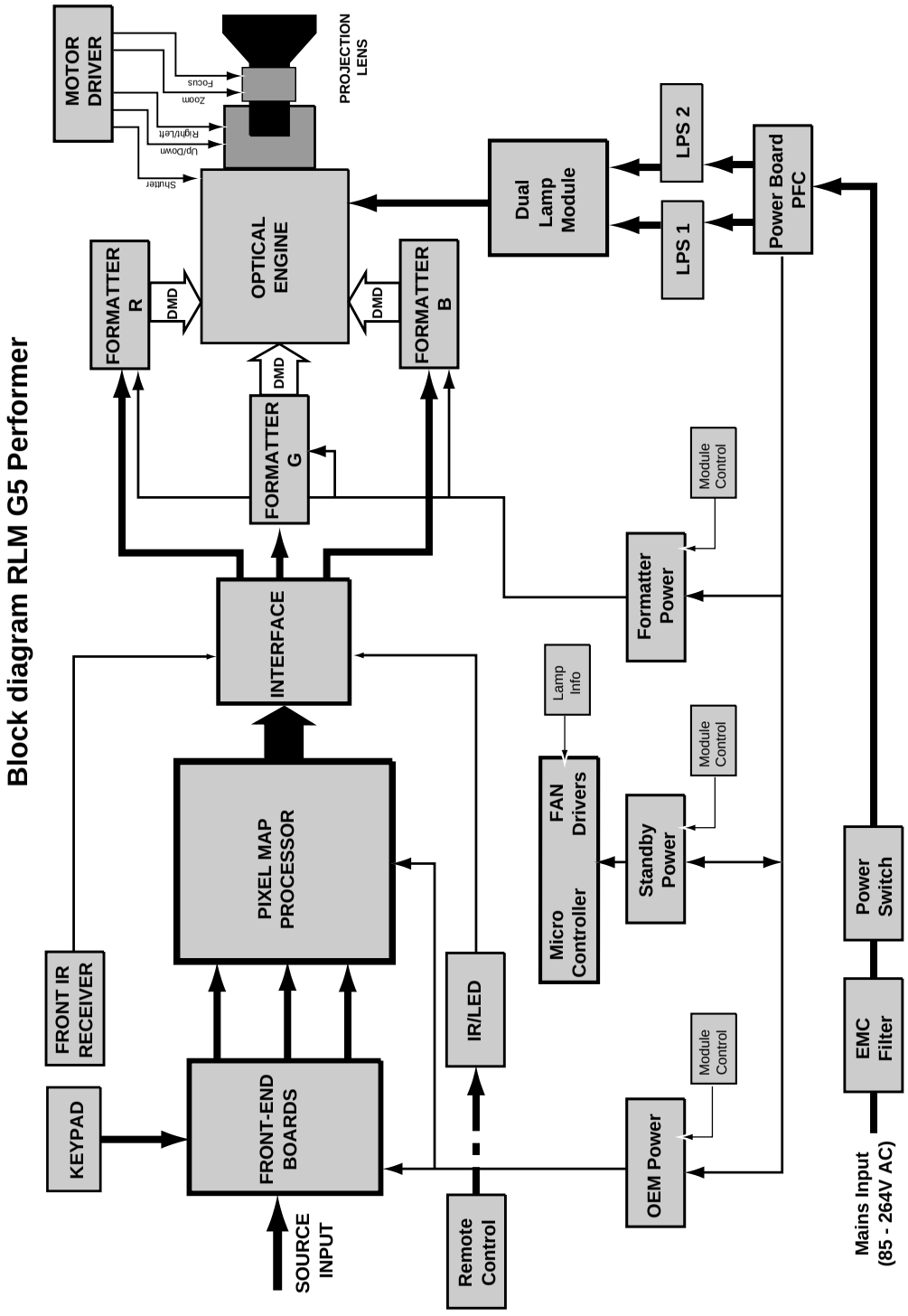


Image 4-1
Block diagram RLM R5 Performer

4.2 Expanded Block Diagram

Block diagram

RLM G5 performer

R G B & Video Input

Digital Video Input

SDI & IEEE11394 Input

Signal board PC

Input backplane

Pixel Map Processor

PIXEL MAP PROCESSOR BOARD

Keypad Board

Front IR Board

LED+IR Board

ADAPTOR BOARD

OEM BOARD

STANDBY BOARD

MCU BOARD

FAN DRIVERS
J10 / J11 / J12 / J13
J21 / J20 / J19 / J18
J14 / J15 / J16 / J17

FORMAT POWER BOARD

LPS 1

LPS 2

PFC Board

POWER SWITCH

Power Module

Lamp Info on Board

LAMP1

LAMP2

Solid state lamp relay

LAMP Module

Motor Board

UP/DOWN
To Lens Holder
Up/Down Motor connector

LEFT/RIGHT
To Lens Holder
Left/Right Motor connector

ZOOM
To Lens Holder
Zoom connector

FOCUS
To Lens Holder
Focus connector

Sealing

To FORMAT Power B/D

ZOOM
To Customer FRONTEND SYSTEM

FOCUS
To Customer FRONTEND SYSTEM

Formatter B/D B_Channel

Formatter B/D G_Channel

Formatter B/D R_Channel

DMD

OPTICAL ENGINE

SHUTTER

Lens Holder

Lens

Motor Adaptor

Motor---
Focus
Zoom

Up/Down Motor

Left/Right Motor

Lens shift Right Limit

Lens shift Left Limit

Lens shift Up Limit

Lens shift Down Limit

UP/DOWN
To Customer FRONTEND SYSTEM

LEFT/RIGHT
To Customer FRONTEND SYSTEM

Note 1 : CN3 of Formatter Board R/G/B Channel

CN3 --- JST S12B-ZR-SM3-TF

12	11	10	9	8	7	6	5	4	3	2	1
5V_IN	GND	3V3VDD_IN	3V3VDD_IN	GND	GND	2V5V_IN	2V5V_IN	2V5V_IN	GND	GND	GND

Note 2 : Vender List of Motor Adj connector

FOCUS Connector : JWT A2001-H02-2P
ZOOM Connector : JWT A2001-H02-3P
UP/DOWN Connector : JWT A2001-H02-4P
LEFT/RIGHT Connector : JWT A2001-H02-5P

5. TECHNICAL INFORMATIONS

5.1 Conventions

Projector Orientation

References to location (left, right, front, rear, top, bottom) on the projector are made as shown in the image below.

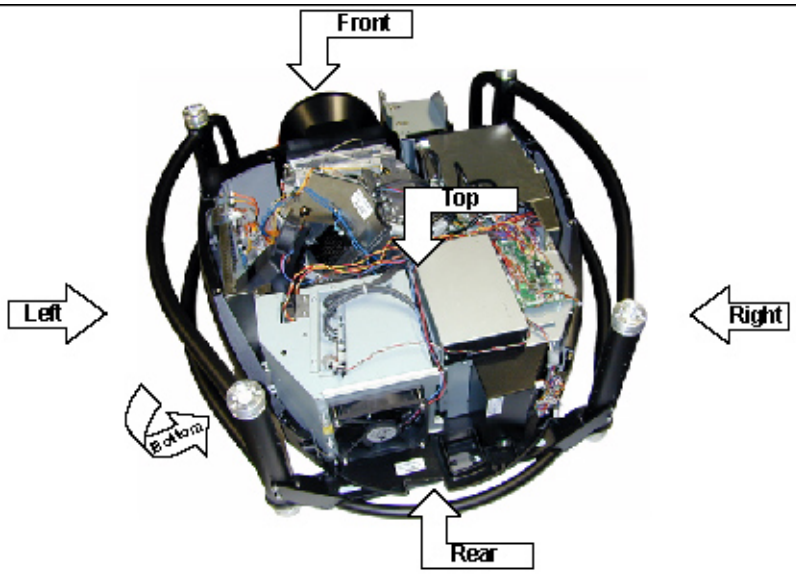


Image 5-1
Projector orientation convention

Spare abbreviations

Each available spare is indicated with one of the following abbreviations:

Abbreviation	Description
NR	Non repairable
CO	Consumable
FR	Factory Repairable
LR	Locally repairable

5.2 Connector Removal Instructions

When needed, remove cable straps to easily disconnect a connector, when finished always replace with new cable straps and tie up the cables to their initial position.

WARNING: Always respect the ES (Electrostatically Sensitive) Instructions .

Do not use any kind of tools when disconnecting a connector.

6. SPARE PARTS LIST

6.1 Spare Parts list

Which spare are available for the RLM R5 Performer

The following spares can be ordered:

Art. Number	Description	Category	Page
B401045K	All dust filters at the bottom of the projector	CO	"Air Filters", page 83
B401040K	Cold mirror (Complete assembly)	NR	
B401033K	Input module (Complete assembly)	FR	"Input Box Swapping", page 31
B401034K	Power Box (Complete assembly)	FR	"Power Box Swapping", page 28
B401042K	4 Fans for cooling the lamp house	NR	"Parts of the Lamp box", page 34
B401041K	3 Fans for cooling the Power Bow	NR	"Parts of the Power Box Assembly", page 27
B401043K	3 Fans for cooling the engine (outside)	NR	"Sealed Engine", page 37
B401030K	All 'loose' cables in one kit	NR	
B400816K	IR Receiver	NR	"IR Receiver Front swapping", page 35
B400823K	Lamp Power Supply	NR	"Lamp Power Supply", page 56
B401038K	Lens holder Asembly	NR	"Lens Holder swapping", page 41
B401039K	Light Pipe assembly	NR	"Light pipe Removal", page 44
B401035K	Local Keypad+ IR/LED Board	NR	"Keypad & LED+IR Board", page 37
B401044K	Mains connector+On/Off switch	NR	
B401032K	Motor Control Board	FR	"Motor/Control board swapping", page 35
B401031K	Power boards: PFC - MCU - Formatter - OEM - Standby	FR	"Power Box Complete", page 26
B401037K	Sealed Engine	FR	"Sealed Engine", page 37
B401036K	Shutter assembly	NR	"Shutter", page 64
B400823K	lamp Power Supply	NR	"Lamp Power Supply", page 56
R9841880	lamp unit	NR	"Lamp unit Removal", page 33

7. PROJECTOR COVER REMOVAL TO ACCESS MODULES

Overview

- Top Access Modules
- Side Access Modules

7.1 Top Access Modules

Overview

- Removal of the Rear cover
- Removal of the Button panel cover
- Removal of the top cover
- Top shield removal

7.1.1 Removal of the Rear cover

How to remove the rear cover

1. Turn the cover lock screw (A) half a turn counterclockwise to release cover. (image 7-1)
2. While lifting up the cover bottom for removal, slightly press on the cover top side (B) to unlock .

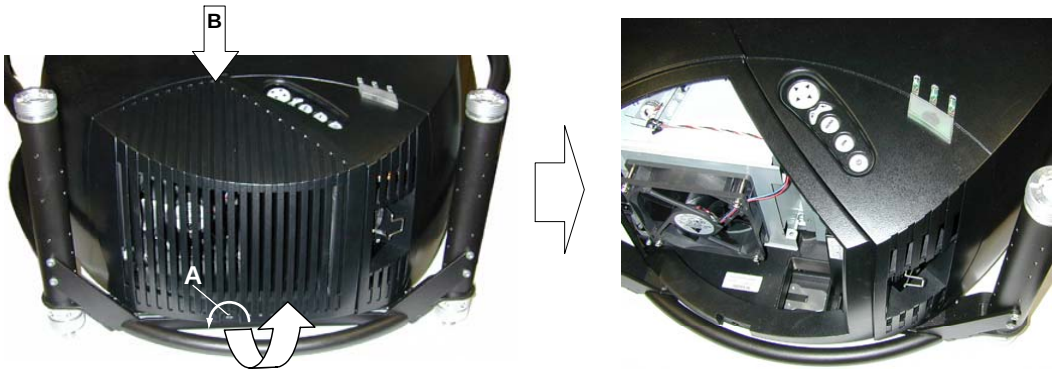


Image 7-1
Rear cover removal

7.1.2 Removal of the Button panel cover

How to remove the button panel cover

1. Carefully release the bottom of the cover by pulling it backwards (A). (image 7-2)
2. Press the left lip (B) on top of the cover inwards (image 7-2).
3. Pull (C) the left side of the cover top upwards to release the lip (B) (image 7-2).
4. Carefully pull (D) the right side of the cover top upwards to release the matching lip (E) (image 7-2).
5. Remove the cover.

Image 7-2
Button panel cover removal

7.1.3 Removal of the top cover

How to remove the top cover

1. Remove the screw (A) securing both plates blocking the slots for the rear cover guides. (image 7-3)
2. Pull out the respective plugs, connecting Control panel (A) and LED panel (B) to projector electronic. (image 7-4)
3. Loosen the top cover by turning the cover lock screw (A) half a turn counterclockwise. (image 7-5)
4. Lift up the top of the cover a little and move the cover backwards to slide both rear cover guides (A) out of their slot (B). (image 7-6)
5. Remove the top cover.

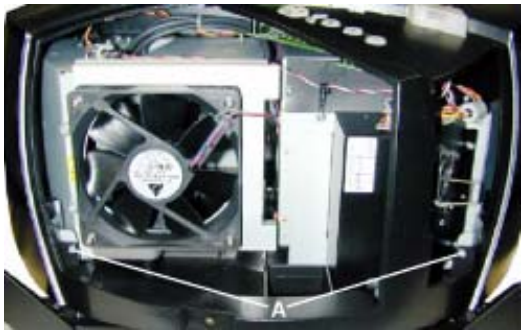


Image 7-3
Blocking plates removal

Image 7-4
Disconnection LED and Control panel

Image 7-5
Unlock top cover

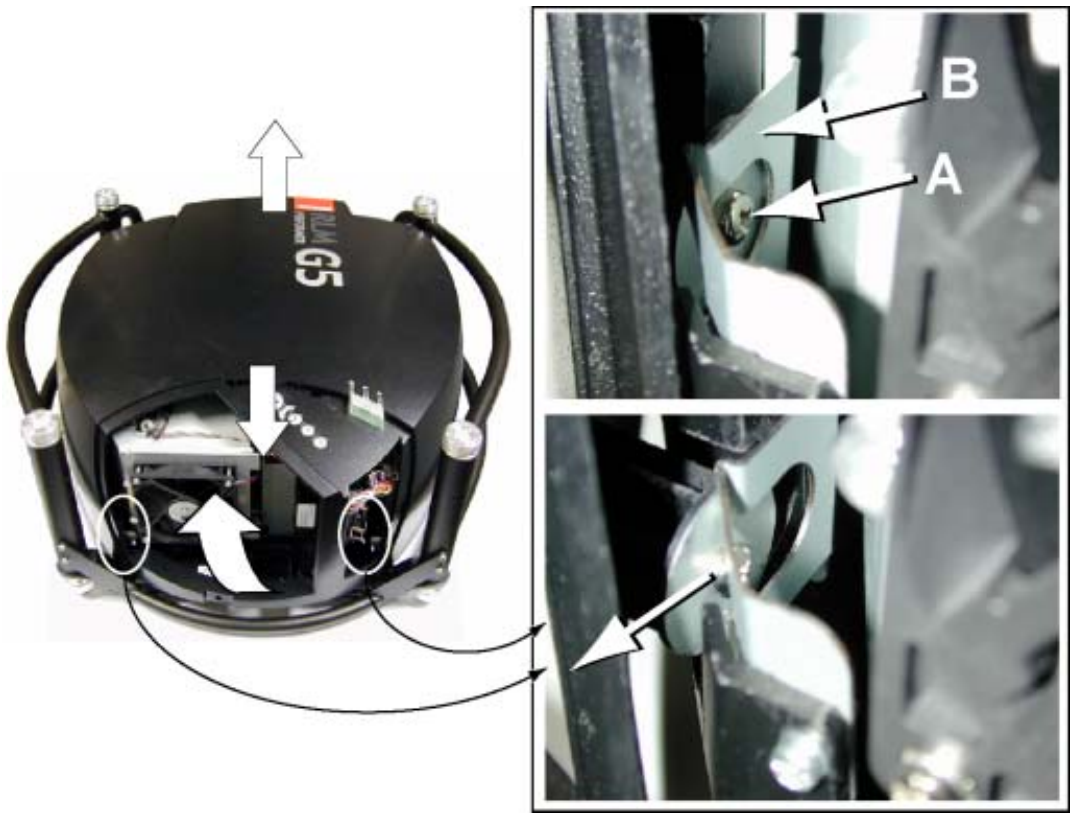


Image 7-6
Top cover removal

7.1.4 Top shield removal

How to remove the projector top shield

1. Remove the 11 screws (A) fastening the projector top shield. (image 7-7)
2. Carefully lift up the projector top shield a little (wire saddle clips hinder shield removal).
3. Pull out the wires out of the wire saddle clips (B) (image 7-7).
4. Remove projector top shield (image 7-7).

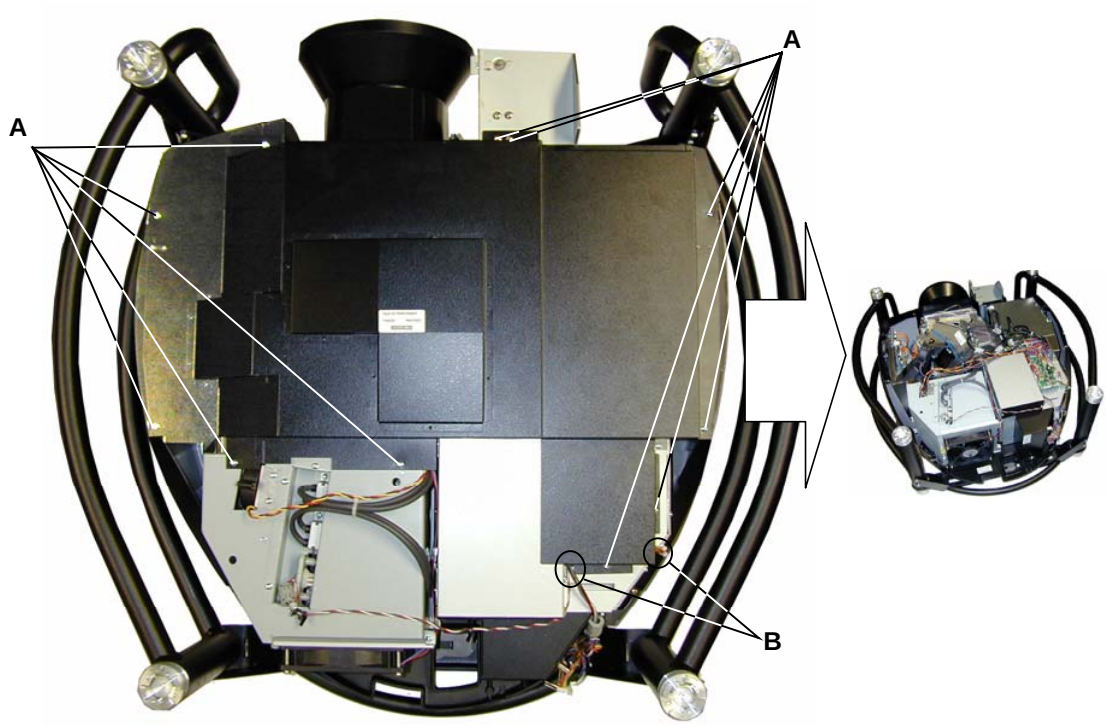


Image 7-7
Top shield removal

7.2 Side Access Modules

7.2.1 Side Cover left

Overview

- Removal of the Side cover
- Side shield removal

7.2.1.1 Removal of the Side cover

How to remove the side cover

1. Remove the 4 screws (A) securing the side cover to projector base plate. (image 7-8)
2. Carefully move backwards the side cover to remove.

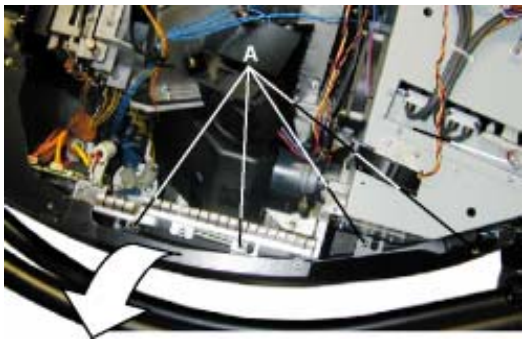


Image 7-8
Left side cover removal

7.2.1.2 Side shield removal

How to remove the side shield

1. Remove the 4 screws (A) securing side shield to lamp house and Temperature/lens motor control board. (image 7-9)
2. Remove the side shield upwards (image 7-9).

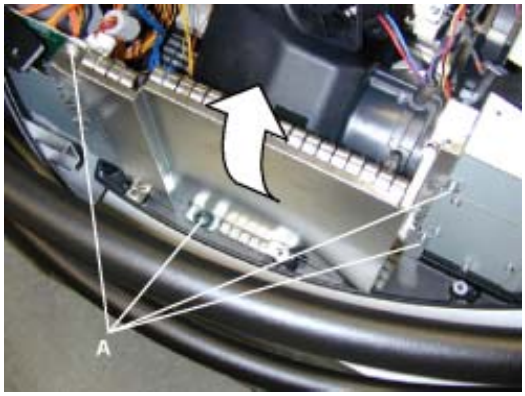


Image 7-9
Side shield removal

7.2.2 Side Cover Right

Overview

- Removal of the Side cover
- Side Shield removal
- PMP Shield Removal

7.2.2.1 Removal of the Side cover

How to remove the side cover

1. Remove the 4 screws (A) securing the side cover to projector base plate. (image 7-10)
2. Carefully move backwards the side cover to remove.

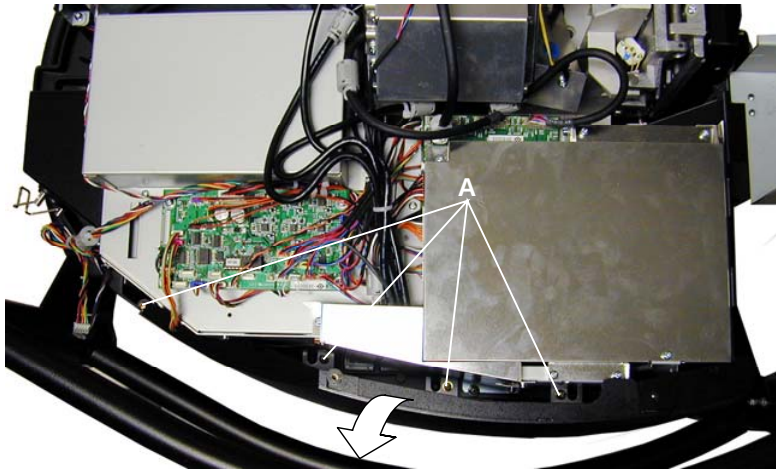


Image 7-10
Side cover removal

7.2.2.2 Side Shield removal

How to remove the side shield

1. Remove the 7 screws (A1 & A2) securing side shield (A) to Power assembly and Input assembly. (image 7-11, image 7-12)
2. Move backwards the shield (A) to remove.

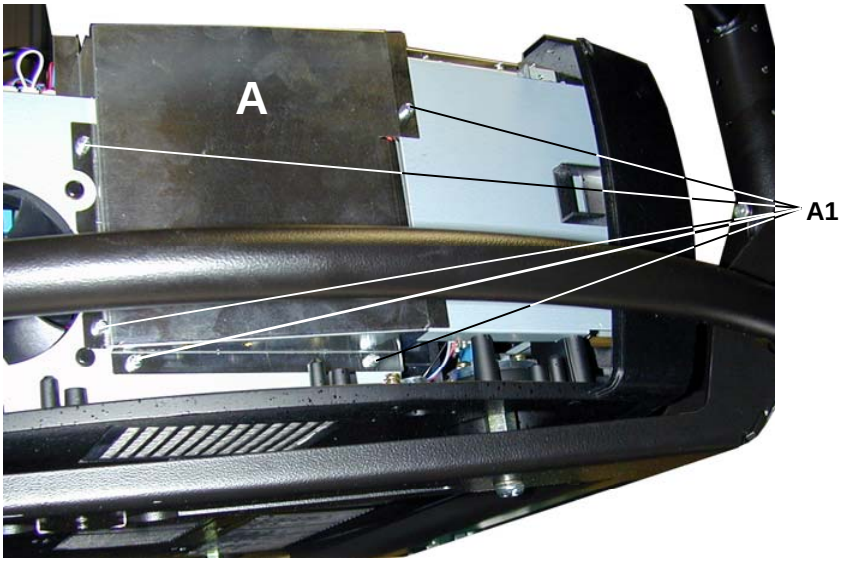


Image 7-11
Side shield removal 1

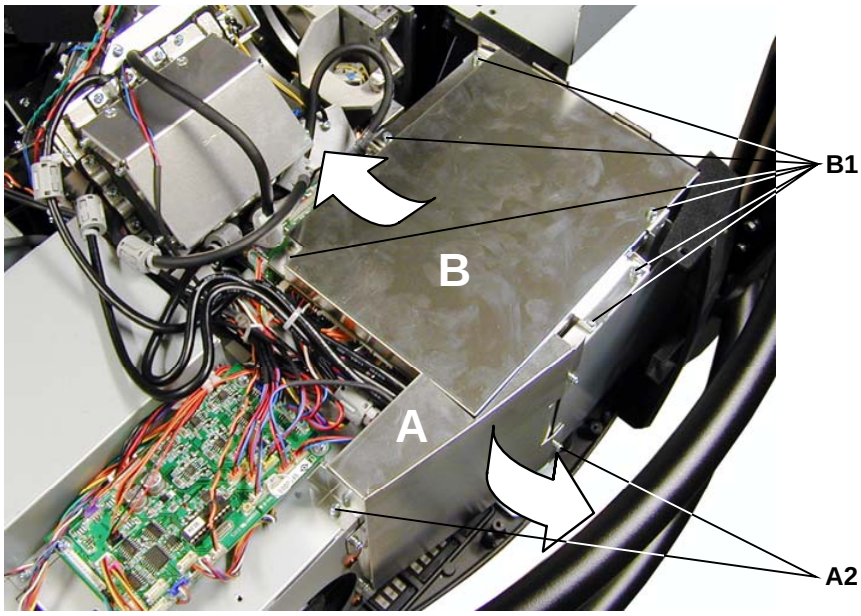


Image 7-12
Side shield removal 2

7.2.2.3 PMP Shield Removal

How to remove the PMP shield

1. Remove the 6 screws (B1) securing shield (B) to base frame (image 7-12).
2. Move the shield towards the engine to remove.

8. MODULE/UNIT IDENTIFICATION

8.1 Top View Projector

Overview Modules/Units-1

After removing the projector covers and the shield on top of the projector, the following modules or units can be identified:

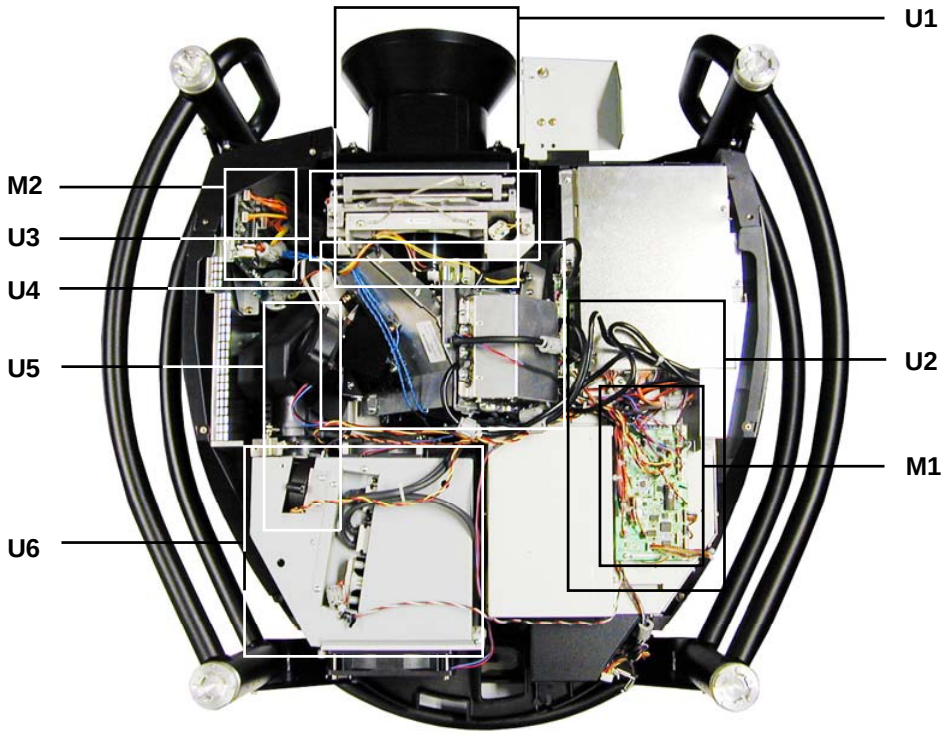


Image 8-1
Module/Units identification

Module (Mx) or Unit (Ux)	Description	Order Number
U1	Lens	R9832640 RLD(0.8) R9832642 RLD(1.5-1.8) R9832643 RLD(1.8-2.25) R9832644 RLD(2.25-3.0) R9832645 RLD(3.0-4.5) R9832646 RLD(4.5-7.0)
U2	Power box complete	B401034K
U3	Lens block	B401038K
U4	Sealed Engine	B401037K
U5	Light pipe	B401039K
U6	Lamp assembly	see further
M1	SMPS control unit	(part of kit B401034K)
M2	Motor control unit	B401032K

Overview Modules/Units-2

After removing the Pixel Map Processor (PMP) cover the following modules or unit can be identified:

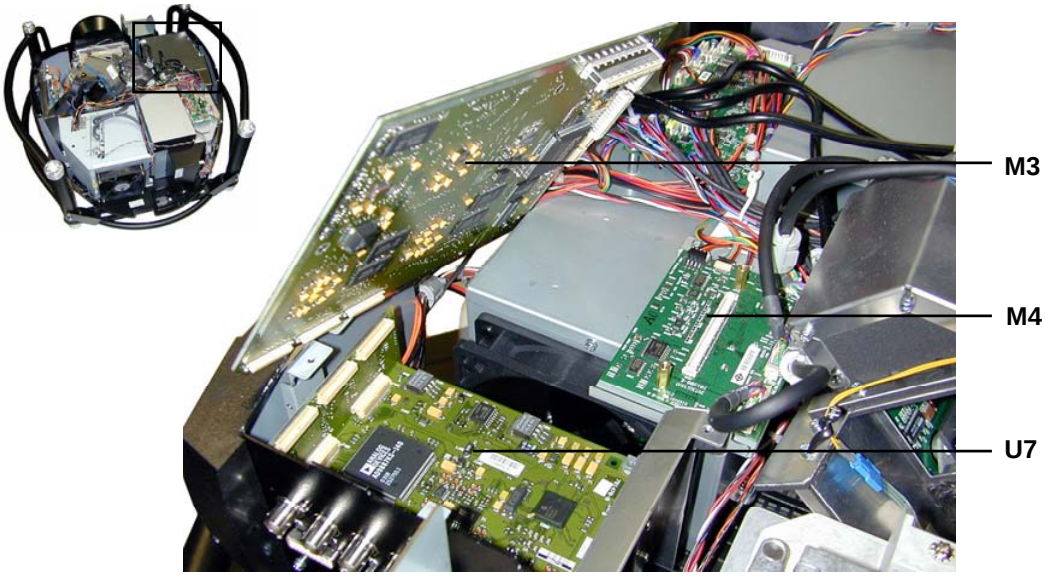


Image 8-2
Modules/units identification

Module (Mx) or Unit (Ux)	Description	Order Number
M3	Pixel Map Processor	(R764284)
M4	Formatter Interface	- -
U7	Input unit cpl	B401033K

8.2 Overview installed FANS

8.2.1 Location of the Fans in the projector

Location FANS in projector

The arrow on some located Fans indicates the produced air flow from the Fan.

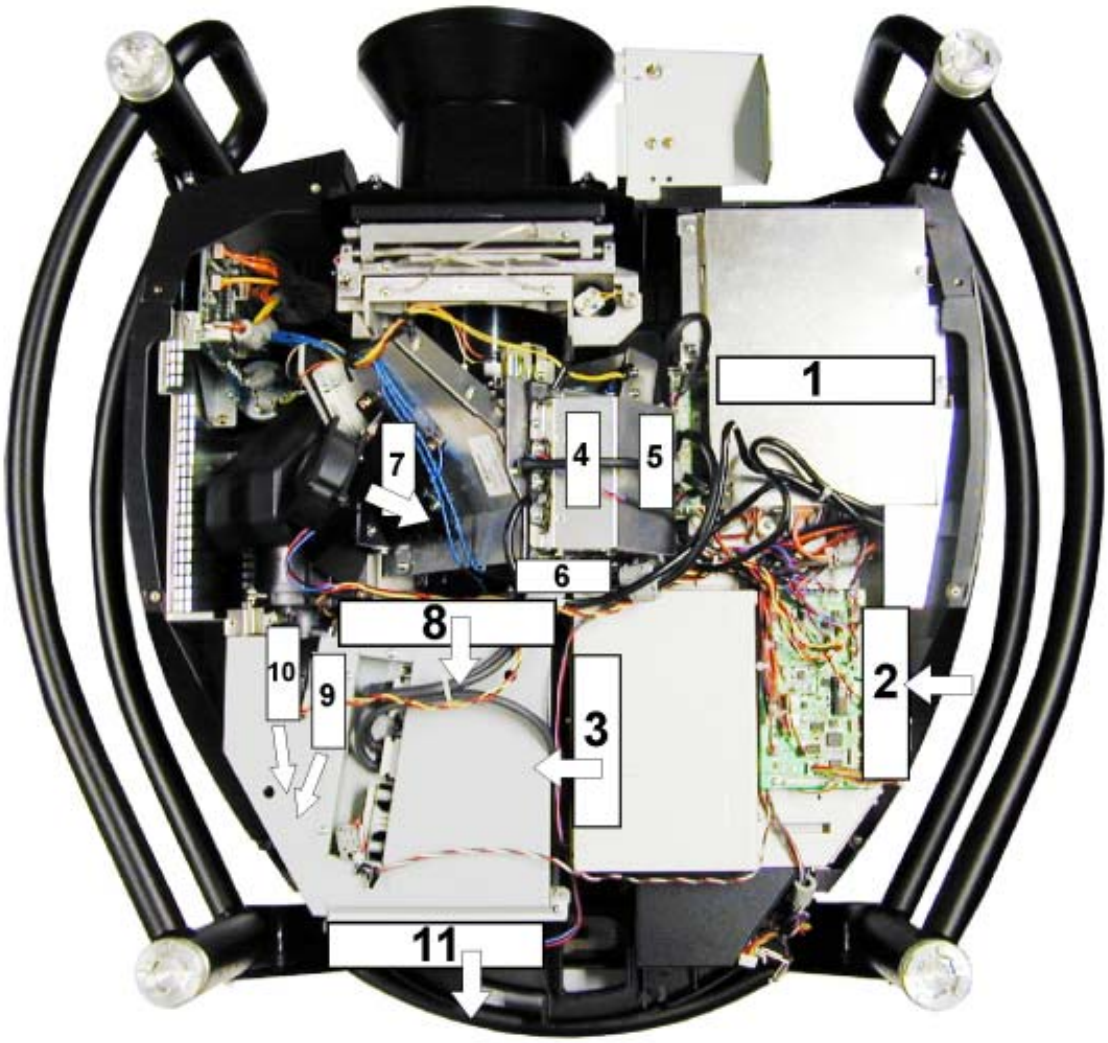


Image 8-3
FAN location in projector

8.2.2 Function of the installed Fans

Function of the FANS

FAN number	Function
1–2–3	Cooling Power Modules
4	Cooling Prism
5	Cooling DMD Red
6	Cooling DMD Green
7	Cooling DMD Blue
8	Cooling Lamp
9 10	Cooling lamp burner up Cooling lamp burner bottom
11	Exhaust fan

8.2.3 Order number for the Fans

How to order a Fan

The 11 installed fans are divided in 3 groups and a specific kit number is allocated to each of them.

Group	Contents	Kit number
I	Fan 1/2/3	B401041K
II	Fan 8/9/10/11	B401042K
III	Fan 5/6/7	B401043K

Fan 4 is not added to one of the above kits because the fan is mounted inside the sealed engine. In the field there is no guarantee about the sealing after the sealed engine has been opened.

8.3 Power Box Complete

Overview

- Power Box Access
- Parts of the Power Box Assembly
- Power Box Swapping

8.3.1 Power Box Access

Access to Power Boards

1. Disconnect the Fan, built-in in the power box cover, by pulling out the Fan wire plug (A) on the SMPS control board. (image 8-4)
2. Remove the 8 screws (B) securing the power box cover.
3. Lift up the cover and move backwards to remove. (image 8-5)

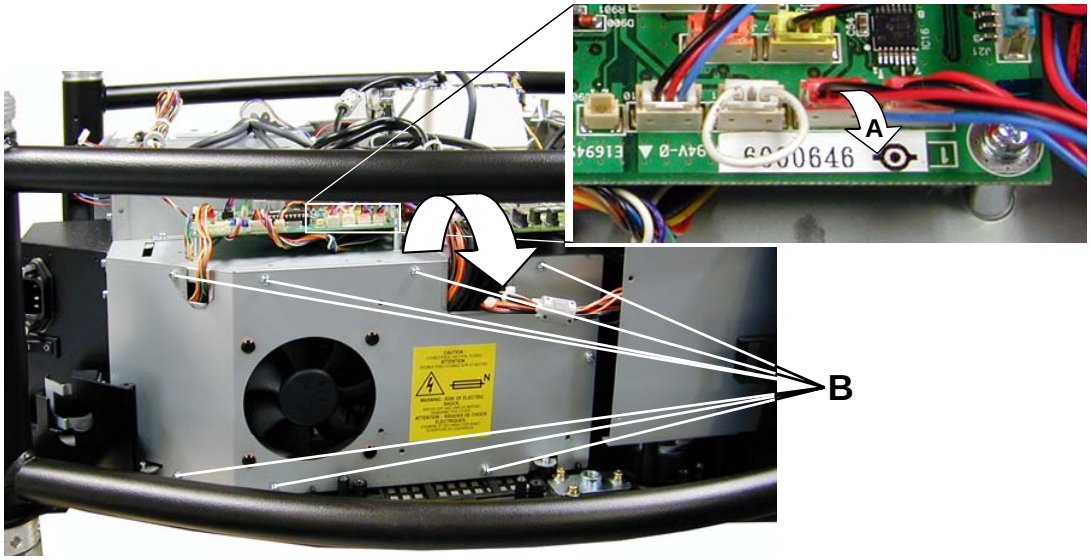


Image 8-4
SMPS box cover removal

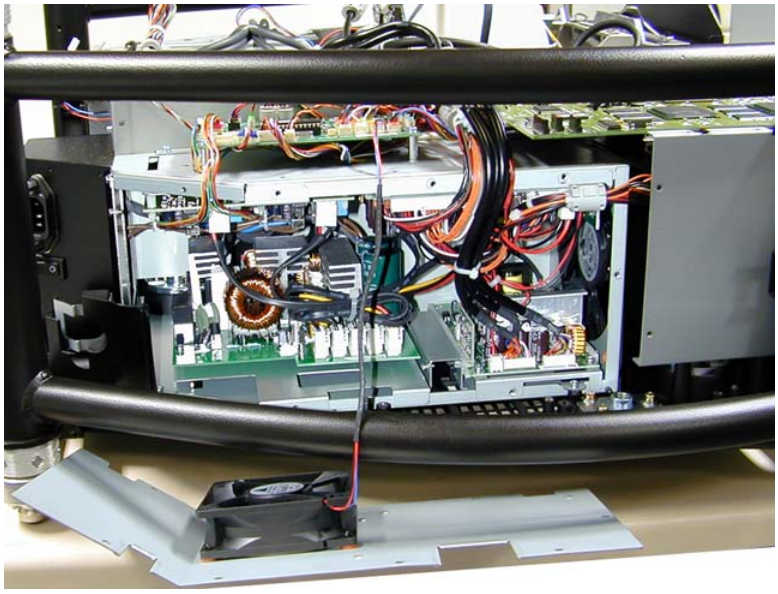


Image 8-5
SMPS box cover removed (Fan not disconnected)

8.3.2 Parts of the Power Box Assembly

Which boards belong to the Power box cpl

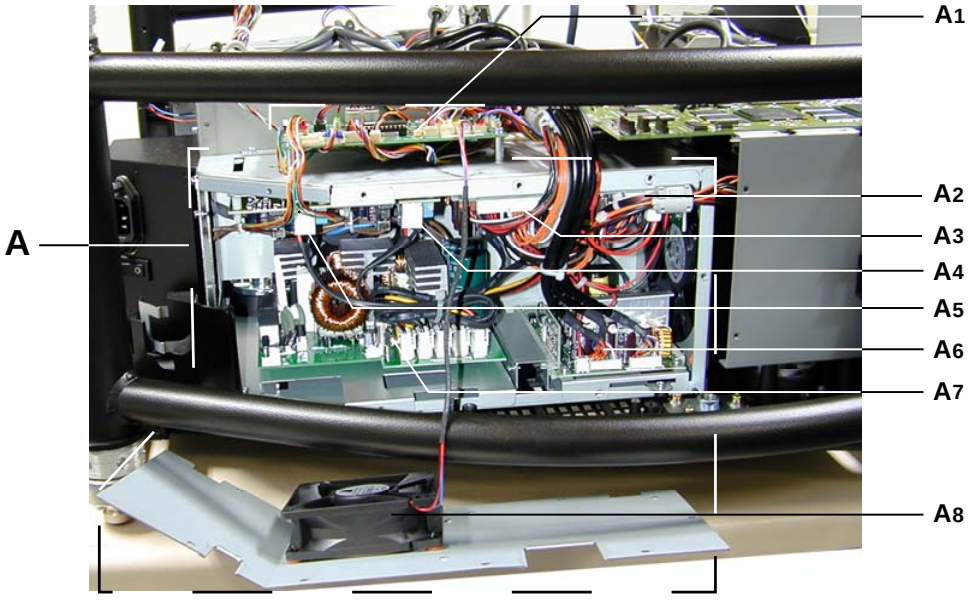


Image 8-6
Parts of the power box cpl

Unit / Board	Description	Partnumber
A	Power box cpl	B401034K
A1	SMPS MCU board	Part of kit B401034K
A2	StandBy Power Supply	Part of kit B401034K
A3	OEM Power supply	Part of kit B401034K
A4	Lamp Power Supply 2	B400823K
A5	Lamp Power Supply 1	B400823K
A6	Formatter Power Supply	Part of kit B401034K

Unit / Board	Description	Partnumber
A7	Power Factor Corrector board	Part of kit B401034K
A8	Fan	Part of kit B401041K

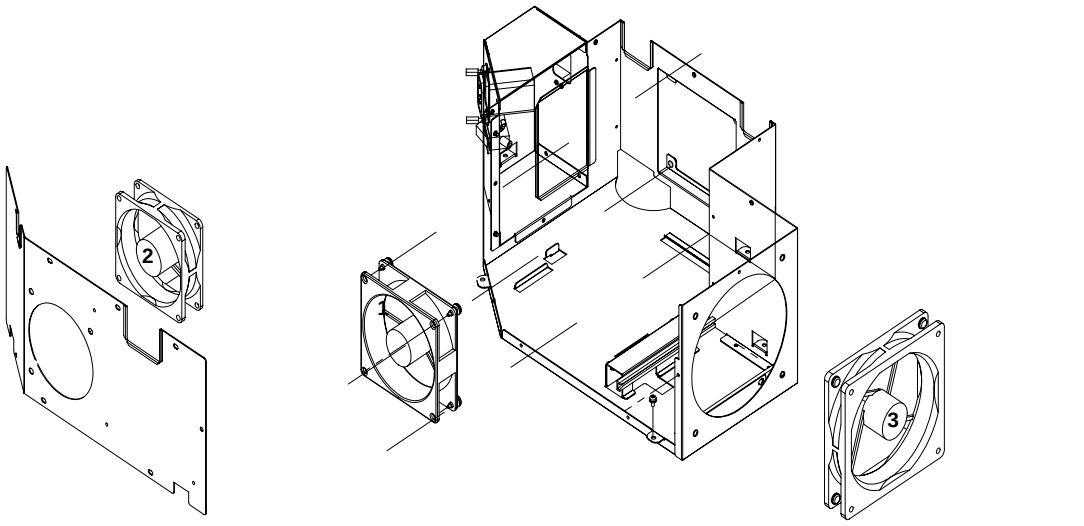


Image 8-7
Overview Fans in power box

Unit / Board	Description	Partnumber
1-2 -3	Fan	kit B401041K (3 x FAN)

8.3.3 Power Box Swapping

How to swap the Power Box

1. Remove the power box cover (see "Power Box Access", page 26).
2. Loosen the formatter interface board (see "Input Box Swapping", page 31).
3. Proceed to the electrical disconnection of the power box:
   - Disconnect plug J304 on the formatter interface board. (image 8-8)
   - Disconnect plugs J301, J409 and J419 on the backplane of the input box. (image 8-9)
   - Disconnect plugs J505, J519 and J509 on the PMP board (image 8-8).
   - Disconnect the plugs J23, J24 and J62 on the formatter power board. (image 8-10)
   - Disconnect the FAN plugs on the SMPs control board. (image 8-11)
   - Disconnect the lamp power plugs as follows: (image 8-12)
     - Remove the 2 screws securing bracket onto the lamp power connectors.
     - Remove the bracket by tilting it fully to the right followed by pulling it upwards.
     - Pull out the lamp power plugs.
4. Proceed to the mechanical disconnection of the power box:
   - Remove the 3 screws (C, D and E) securing the power box to the projector base frame. (image 8-13)
   - Loosen the 2 captive screws (A and B) securing the power box to the projector base frame (image 8-13).
5. Move the power box upwards to remove.

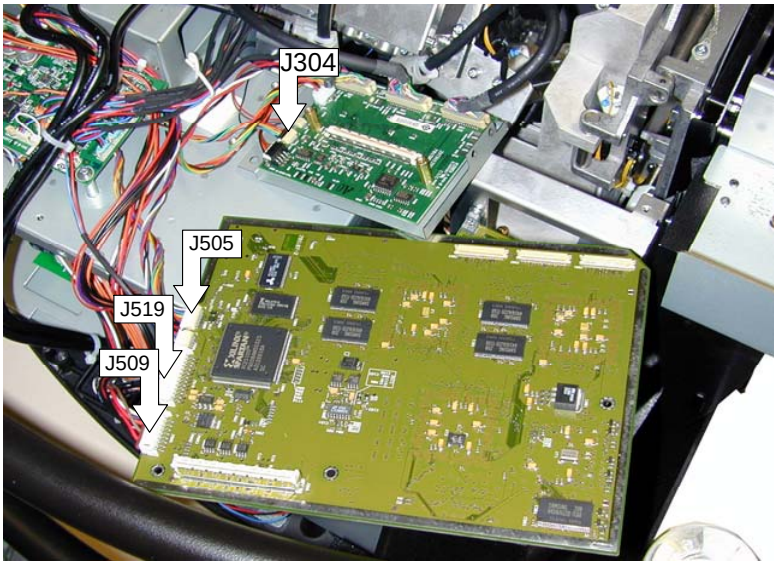


Image 8-8
Disconnection PMP and Formatter interface

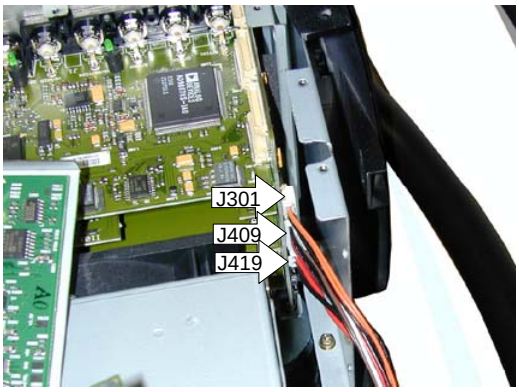


Image 8-9
Disconnection Input box

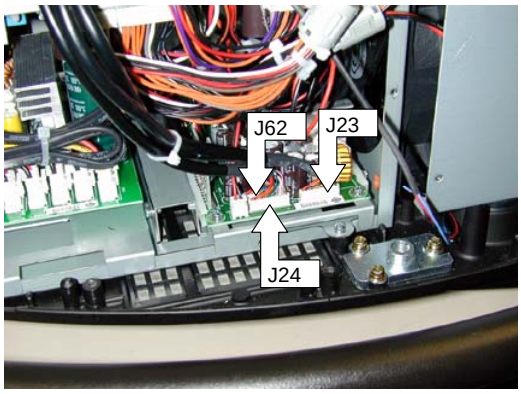


Image 8-10
Disconnection Formatter power supply

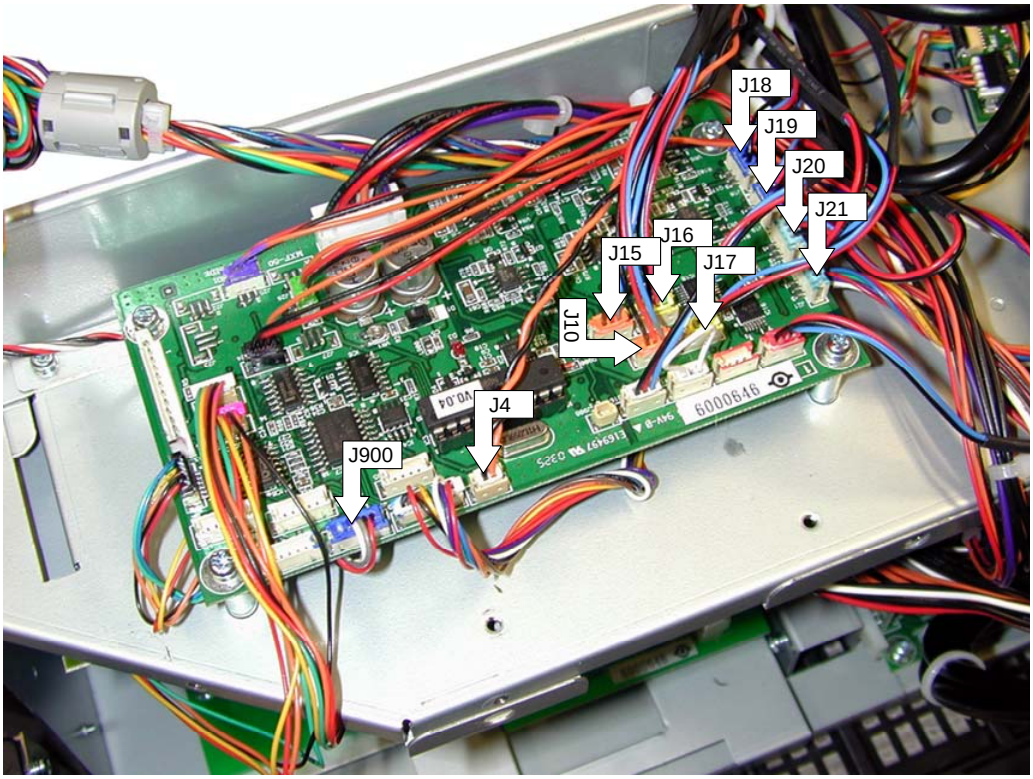


Image 8-11
Disconnection Fans

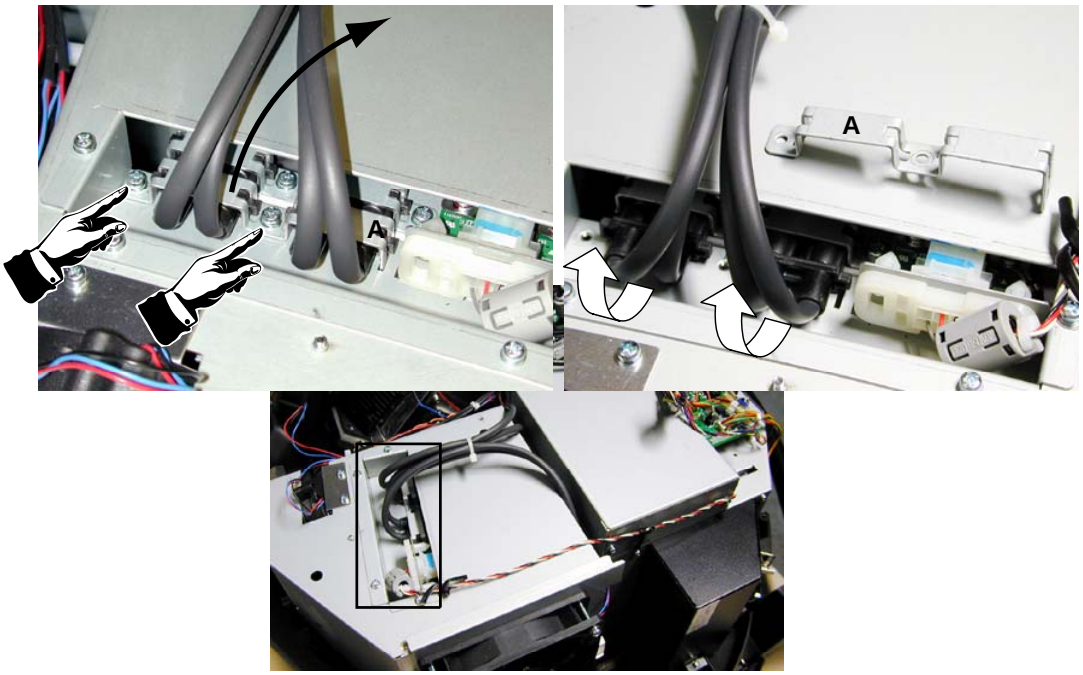


Image 8-12
Disconnection of the lamp power supply

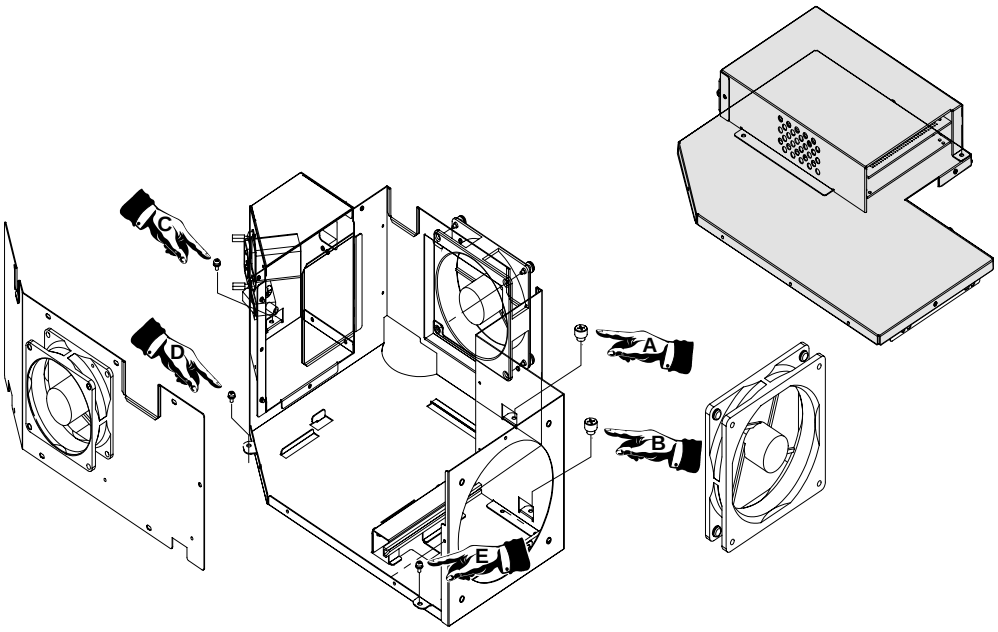


Image 8-13
Power box fixation

8.4 Input Box Complete

Overview

- Input Box Swapping
- Parts of the input Box Assembly

8.4.1 Input Box Swapping

Access to Input boards

1. Remove the 3 screws securing the PMP board to the input box (1) and to the formatter interface board (2&3). (image 8-14)
2. Carefully unplug, by pulling the PMP board upwards, the PMP board from the input backplane (B) and the formatter interface board (A) (image 8-14).
3. Remove the 2 screws (3&4) securing the formatter interface board to the power box. (image 8-15)
4. Remove the 2 screws (1&2) securing the formatter interface board to the input box (image 8-15).
5. Loosen the 2 captive screw (1&2) securing the input box to projector bottom. (image 8-16)
6. Disconnect input box by pulling out the 3 respective power plugs (A,B&C).
7. Pull the input box upwards to take out the projector main frame.

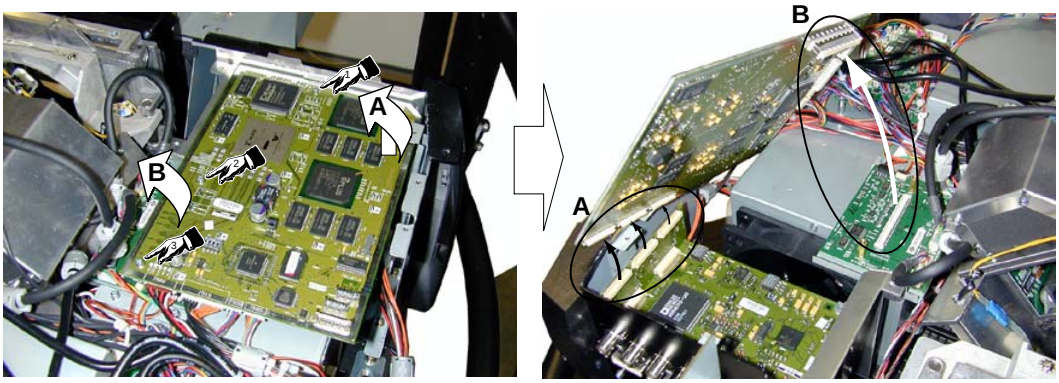


Image 8-14
PMP removal

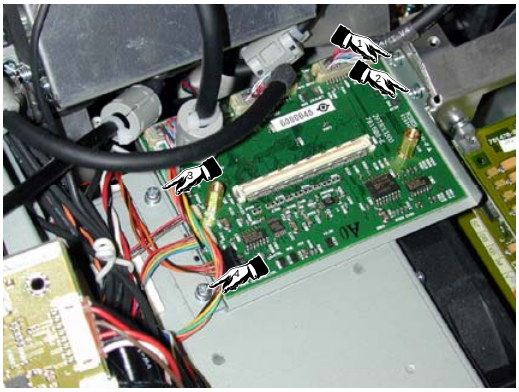


Image 8-15
Formatter interface

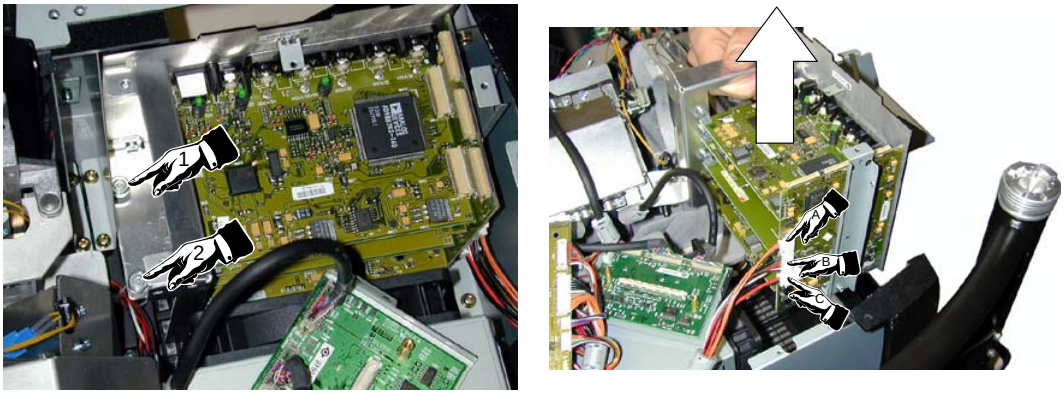


Image 8-16
Input box removal

8.4.2 Parts of the input Box Assembly

Which boards belong to the Input box cpl

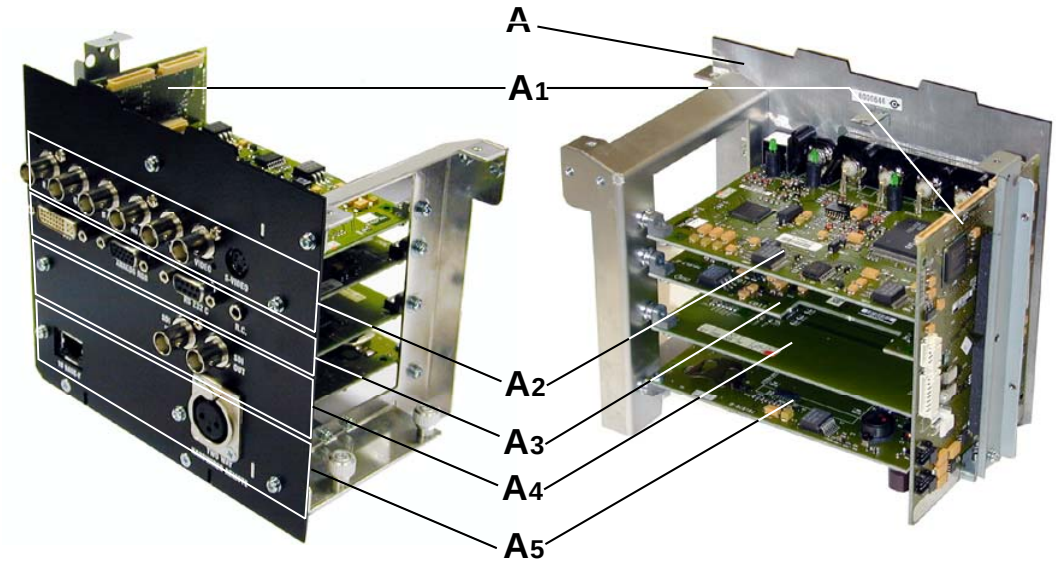


Image 8-17
Parts of the input box cpl

Unit / Board	Description	Partnumber
A	Input box cpl	B401033K
A1	Input backplane board	Part of kit B401033K
A2	RGBHV/Composite Video/S-Video input board	Part of kit B401033K
A3	DVI/Computer/RS232C/RC input board	Part of kit B401033K
A4	SDI In-/Output board	Part of kit B401033K
A5	2-Way hardwired Remote+Ehernet	Part of kit B401033K

8.5 Lamp Box

Overview

- Lamp unit Removal
- Parts of the Lamp box

8.5.1 Lamp unit Removal

CAUTION: Let cool down the projector before handling the lamp house to avoid burning.

How to remove the lamp unit from lamp house

1. Loosen the 2 spring screws (E) securing the fan door to the lamp house. (image 8-18)
2. Rotate (F) the fan door counterclockwise to open. (image 8-19)
3. Loosen the 2 spring screws (G) securing Lamp unit onto base plate. (image 8-20)
4. Disconnect the lamp plug (H) by pulling the lamp unit to the right.
5. Take the lamp unit out (I) the lamp house. (image 8-21)

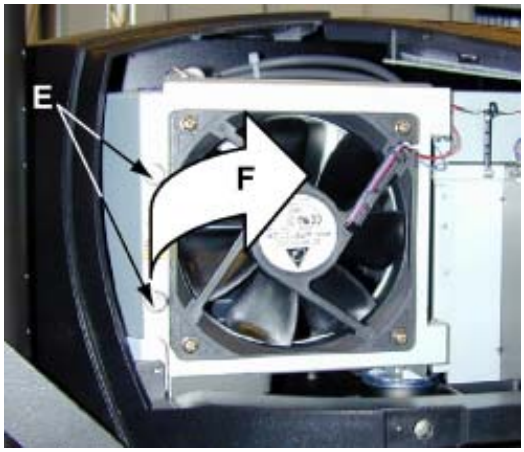


Image 8-18
Loosen fan door

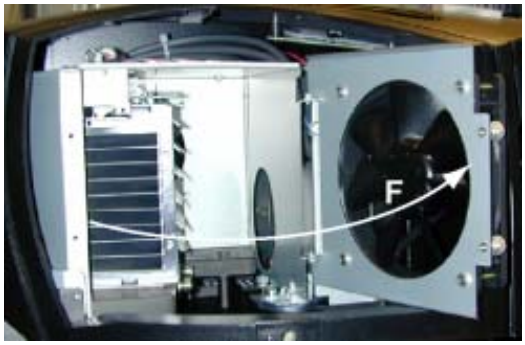


Image 8-19
Open fan door

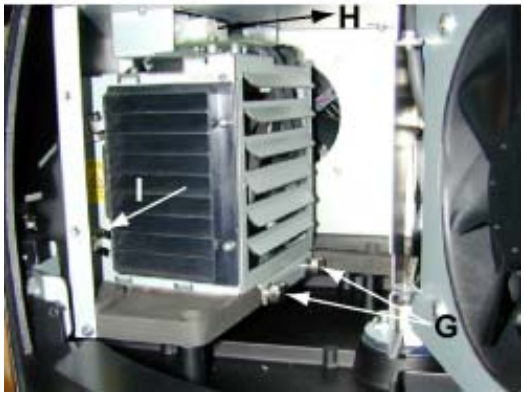


Image 8-20
Loosen lamp unit

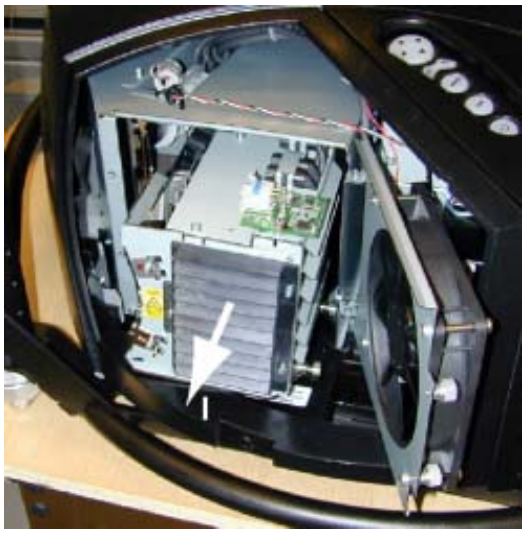


Image 8-21
Take out lamp unit

8.5.2 Parts of the Lamp box

Which parts belong to the lamp box?

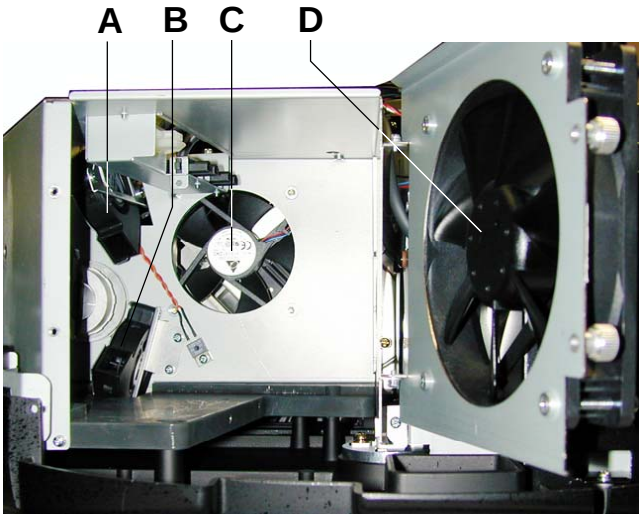


Image 8-22
Parts of the lamp box

Unit / Board	Description	Partnumber
A	Cooling lamp burner top	Part of kit B401042K
B	Cooling lamp burner bottom	Part of kit B401042K
C	Cooling lamp	Part of kit B401042K
D	Exhaust Fan	Part of kit B401042K
E	Lamp unit	kit R9841880

8.6 IR Receiver Front

8.6.1 IR Receiver Front swapping

How to swap the IR Receiver front

To access the IR Receiver front, the engine and the lens holder have to be removed.

1. Disconnect the IR Receiver board. (image 8-23)
2. Remove the 2 screws securing the board to front cover.
3. Remove the board.

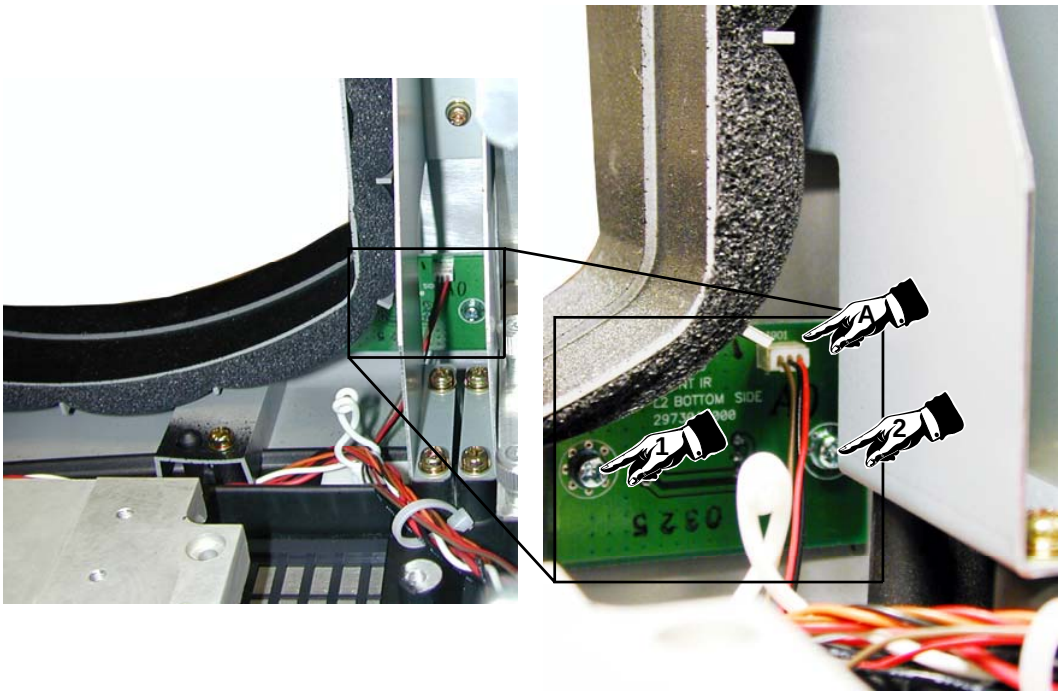


Image 8-23
IR Receiver removal

8.7 Motor/Control Board

8.7.1 Motor/Control board swapping

How to remove the motor-control board

To access the motor control board, only the top cover of the projector has to be removed.

1. Remove the 2 screws (1&2) , securing the board on top and bottom. (image 8-24)
2. Slide the motor control board out the board slots (A&B) to remove (image 8-24).
3. Pull out all the plugs to allow board swapping (Order No kit: **B401032K**).

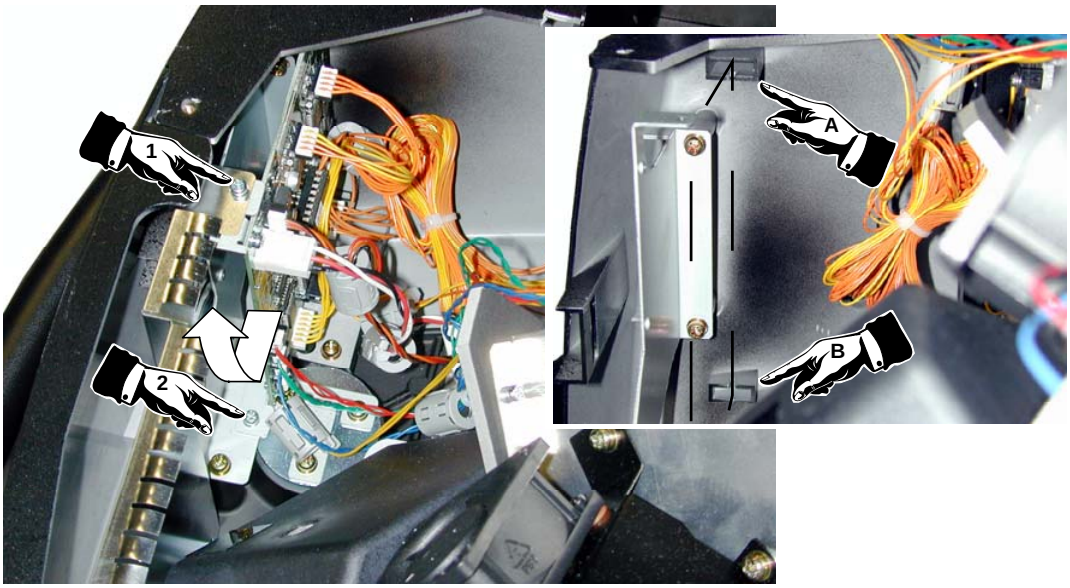
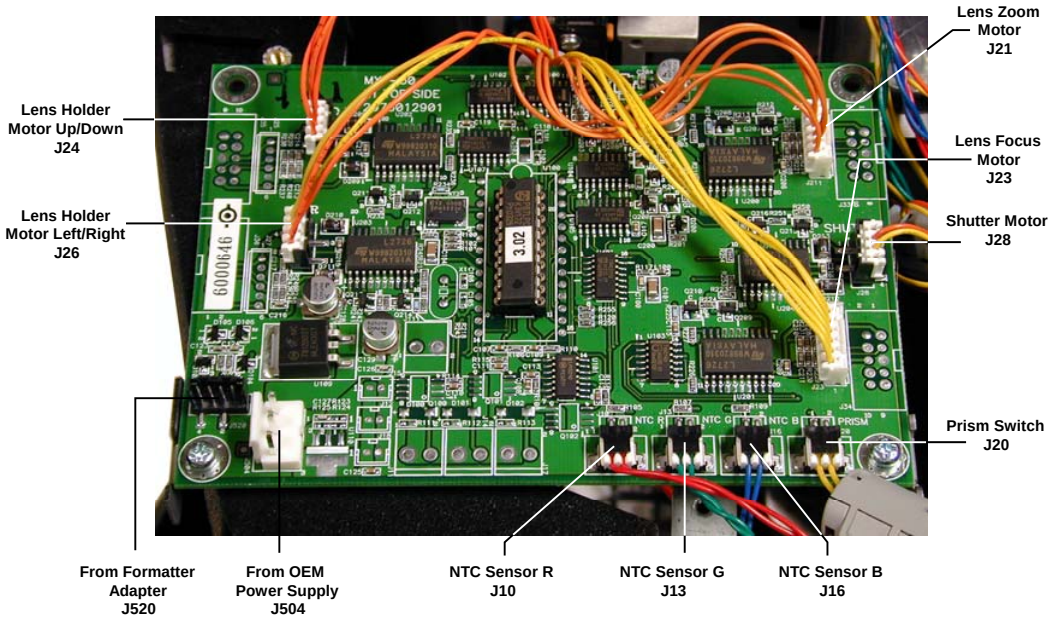


Image 8-24
Motor control board removal

8.7.2 Motor/Control board connections

Connections


Lens Zoom Motor J21
Lens Holder Motor Up/Down J24
Lens Focus Motor J23
Lens Holder Motor Left/Right J26
Shutter Motor J28
Prism Switch J20
From Formatter Adapter J520
From OEM Power Supply J504
NTC Sensor R J10
NTC Sensor G J13
NTC Sensor B J16

J520
1 IRQ DMD
2 SDA
3 SCL
4 GND

J504
1 +15V
2 +5VD
3 GND

J24
1 D Rev
2 REV
3 FW
4 D Fw

J26
1 D Rev
2 REV
3 FW
4 D Fw

J20
1 +5VD
2 GND

J10/13/16
1 +5VD
2 GND

J28
1 D Rev
2 REV
3 FW
4 D Fwd

J21
1 Mtr Fwd
2 +5VD
3 Cha A
4 Cha B
5 GND
6 Mtr Rev

J23
1 Mtr Fwd
2 +5VD
3 Cha A
4 Cha B
5 GND
6 Mtr Rev

Image 8-25
Motor/Control board connections

8.8 Keypad & LED+IR Board

8.8.1 Keypad swapping

How to swap the Keypad

The keypad is mounted onto the inside of the top cover. To remove the top cover, keypad board has to be disconnected (see top cover removal)

1. Remove the 5 screws (A), securing the keypad board to top cover. (image 8-26)
2. Remove the keypad board.

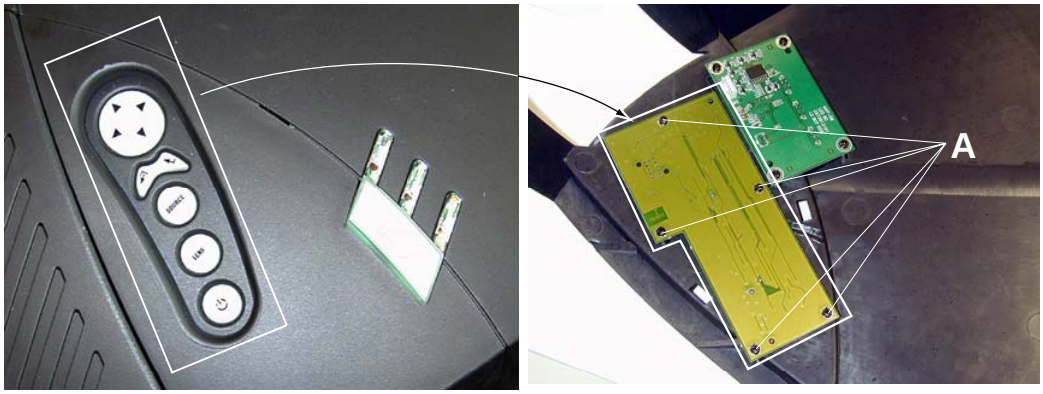


Image 8-26
Keypad removal

8.8.2 LED+IR Board

How to swap the LED+IR board

The LED+IR board is mounted onto the inside of the top cover. To remove the top cover, LED+IR board has to be disconnected (see top cover removal)

1. Remove the 4 screws (A), securing theLED+IR board to top cover. (image 8-27)
2. Remove the LED+IR board.

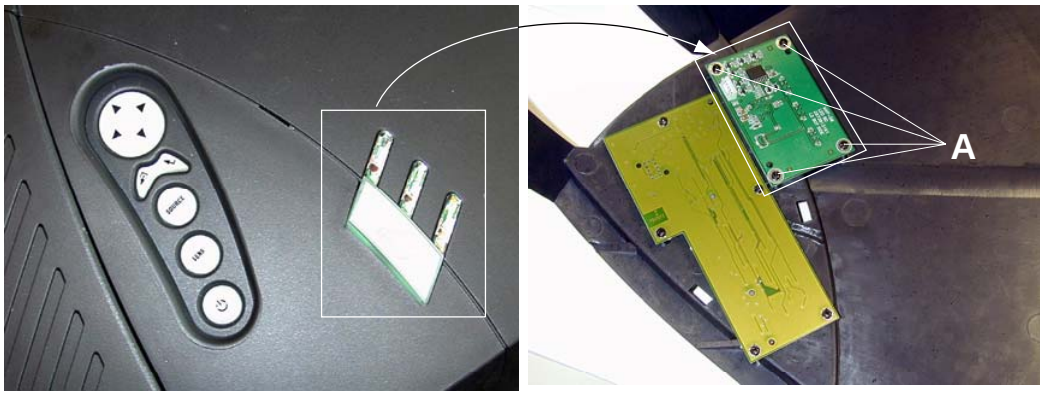


Image 8-27
LED+IR board removal

8.9 Sealed Engine

Overview

- Sealed Engine removal
- Sealed Engine mounting

8.9.1 Sealed Engine removal

How to remove the Sealed Engine

1. Proceed to the disconnection of the following cables:
   - Disconnect the Prism switch (3) near the switch itself. (image 8-28)
   - Disconnect the 3 Cables on the formatter interface (2) connecting video data to the formatter boards in the Sealed engine (image 8-28).
   - Disconnect the shutter cable (6) from the motor and temperature control board. (image 8-29)
   - Disconnect the 3 temp. sensor cables (4) from the motor and temp. control board.
   - Disconnect the 3 power cables (1) to the formatter boards in the Sealed engine from the formatter power supply (image 8-29).
   - Disconnect the 2 cables (5) to the DMD R & G cooling fan from the SMPS/Fan control board (image 8-29).
   - Disconnect the cable to the Prism cooling fan (5) from the SMPS/Fan control board (image 8-29).
2. Remove the cooling Fan of the DMD Blue, mounted on the sealed engine, by removing the 3 fixation screws (1 to 3). (image 8-30)
3. Remove the 3 screws, securing the sealed engine to the base frame. (image 8-31)
   Note: *To loosen the screw 3, a long crosshead screwdriver is required.*
4. Carefully remove upwards the sealed engine out of the projector (image 8-28). image 8-32)
5. Remove the Shutter assembly from the sealed engine, for reuse on the new one, by loosening the 2 fixation screws. (image 8-33)

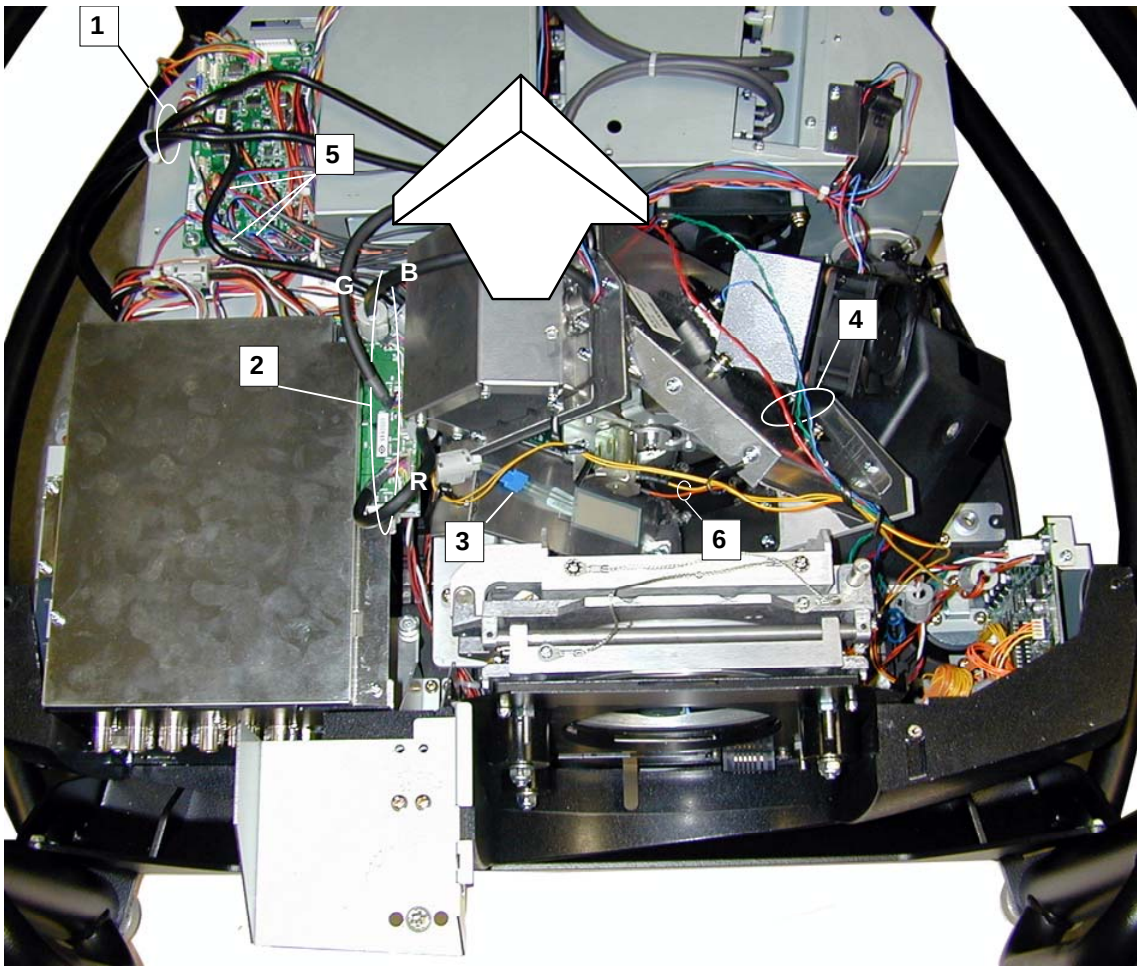


Image 8-28
Sealed engine cable disconnection overview

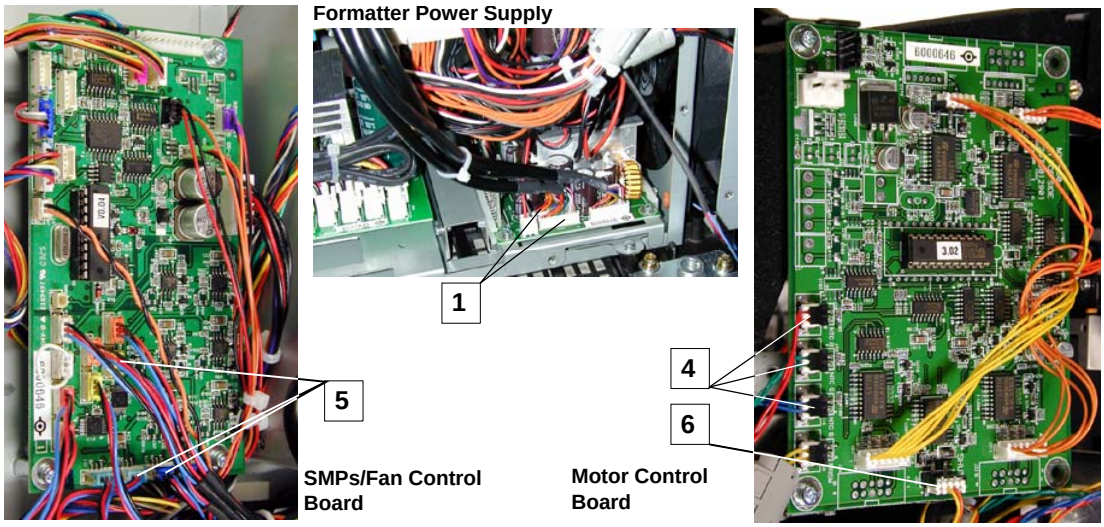


Image 8-29
Sealed engine cable disconnection detail

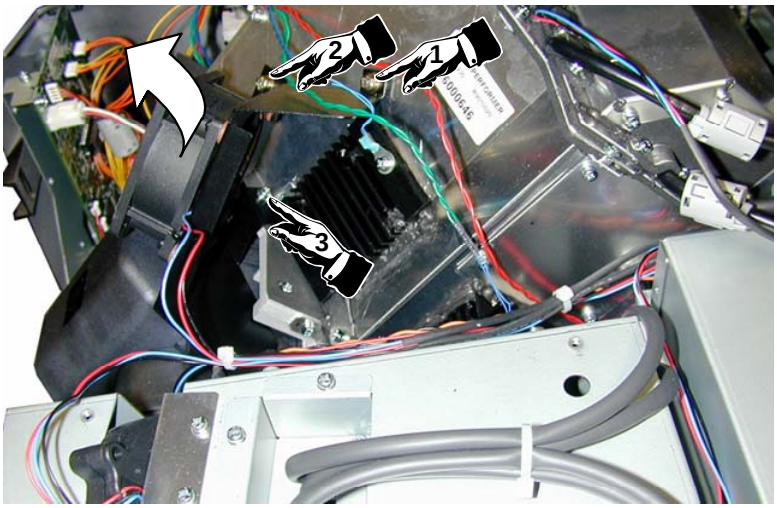


Image 8-30
Removal cooling Fan DMD blue

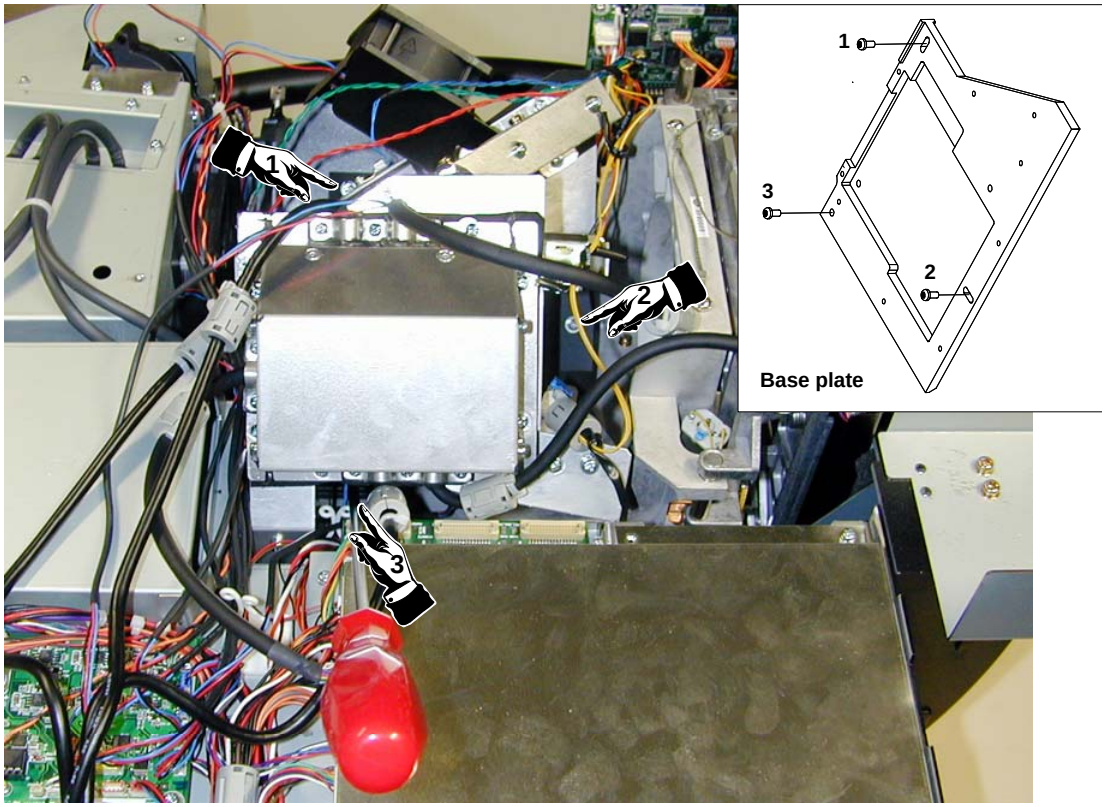


Image 8-31
Sealed engine removal from base plate

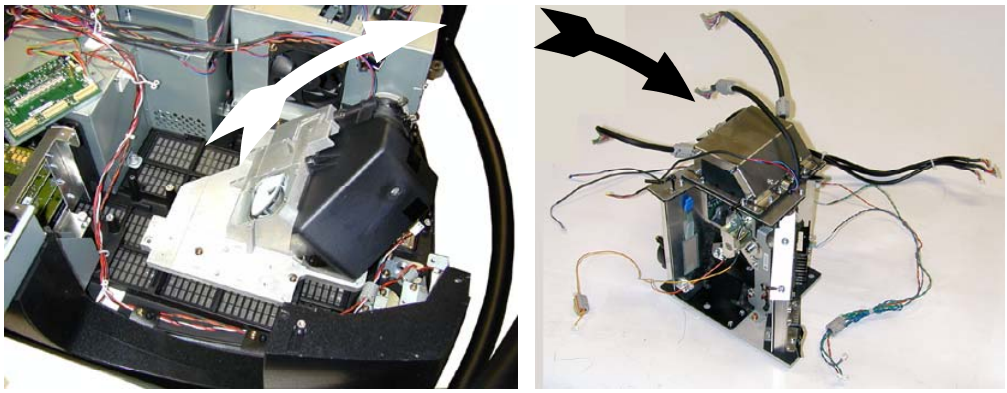


Image 8-32
Sealed engine removed

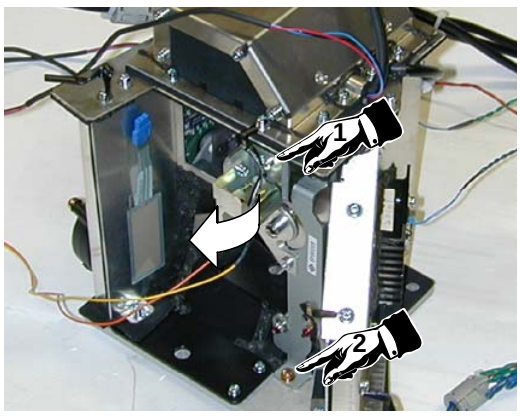


Image 8-33
Shutter removal

8.9.2 Sealed Engine mounting

How to mount the Sealed engine

1. Place the sealed engine on its mounting base, lining up the 2 center pins (1 & 2) on the engine front plate with the holes in the mounting base. (image 8-34)
2. Secure the sealed engine onto the mounting base with 3 screws (A, B & C) (image 8-31).
3. Go back to the chapter 'Sealed engine removal' to reinstall all cable connections and Fan mounting (see "Sealed Engine removal", page 38).

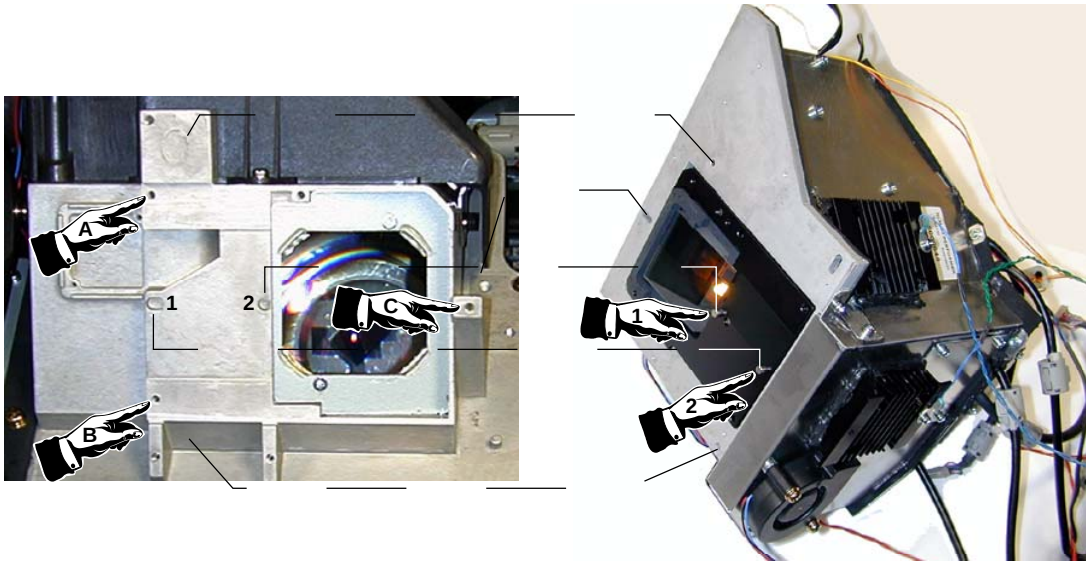


Image 8-34
Sealing engine mount

8.10 Lens Holder

8.10.1 Lens Holder swapping

How to swap the lens holder

1. Disconnect the lens holder motor wires from the motor control board. (image 8-35)
2. Remove the 5 screws (1=long - 2 to 5 short) securing the lens holder to bottom frame. (image 8-36)
3. Move lens holder upwards to remove.

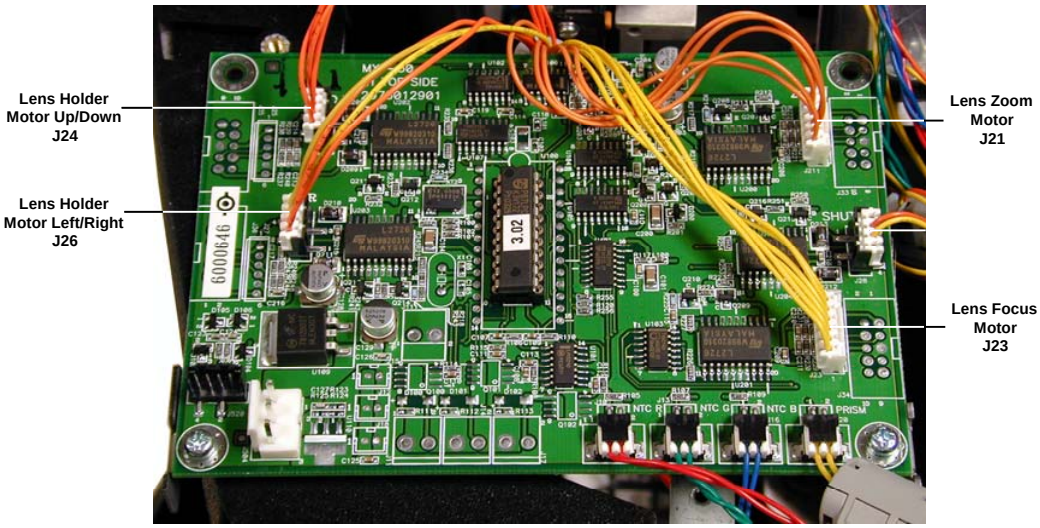


Image 8-35
Lens holder motor disconnection

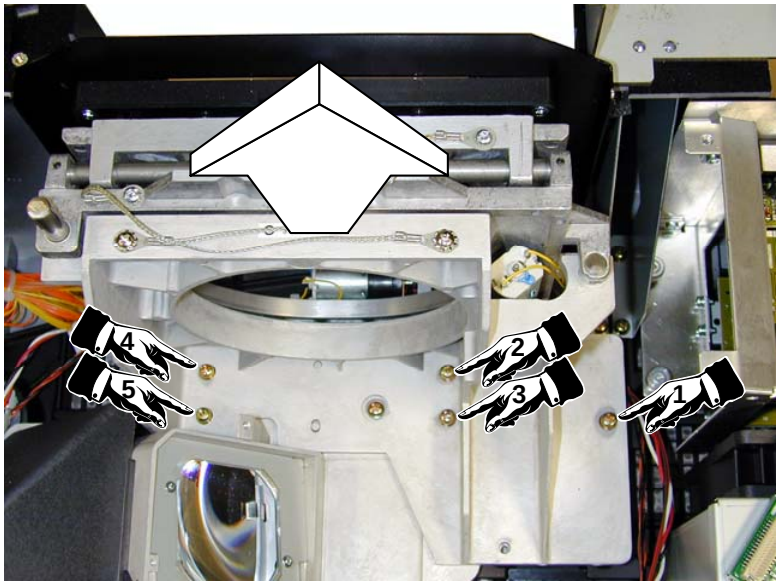


Image 8-36
Lens holder removal

8.11 Light Pipe

Overview

- Parts to be removed to allow Light Pipe swapping
- Replacement of the Light pipe

8.11.1 Parts to be removed to allow Light Pipe swapping

Overview

- Light pipe Focus adjustable screw cover removal.
- Lamp burner blower FAN 9 removal
- Lamp House removal

8.11.1.1 Light pipe Focus adjustable screw cover removal.

How to remove the cover

1. Remove the 5 screws (A) securing the cover to the lamp house and the projector base plate. (image 8-37)
2. Remove the cover.

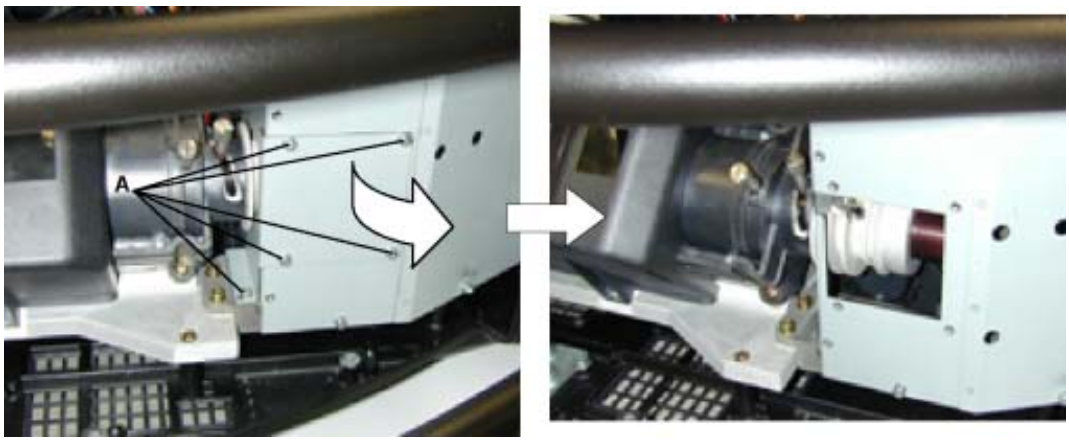


Image 8-37
Light pipe focus adjust screw cover

8.11.1.2 Lamp burner blower FAN 9 removal

How to remove the lamp burner blower FAN 9

1. Remove the 2 screws (A) securing the blower to the lamp house. (image 8-38)
2. Remove the blower out of the base plate.

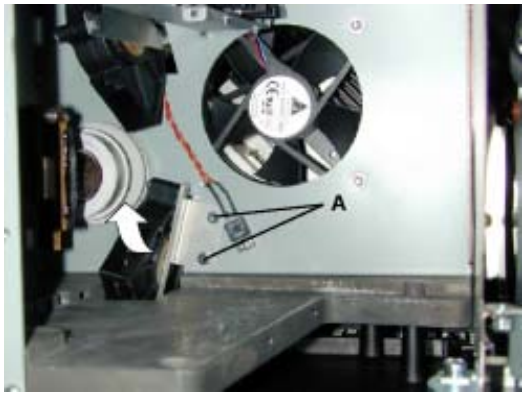


Image 8-38
FAN 9 removal

8.11.1.3 Lamp House removal

How to remove the lamp house

1. Remove the 3 screws (A) securing left side of the lamp house to the base plate. (image 8-39)
2. Remove the 2 screws (A) securing rear side of the lamp house to the base plate (image 8-39).
3. Move the lamp house upwards to remove from projector frame (Access to rear fan on lamp house). (image 8-40)

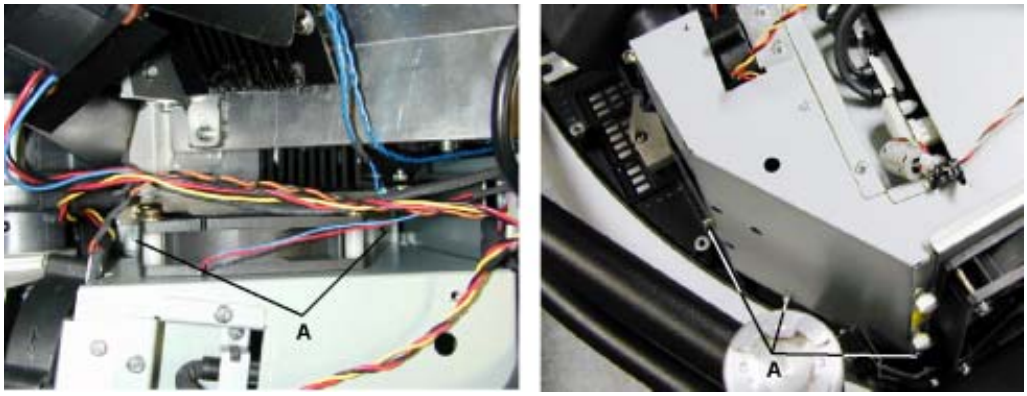


Image 8-39
Lamp house removal

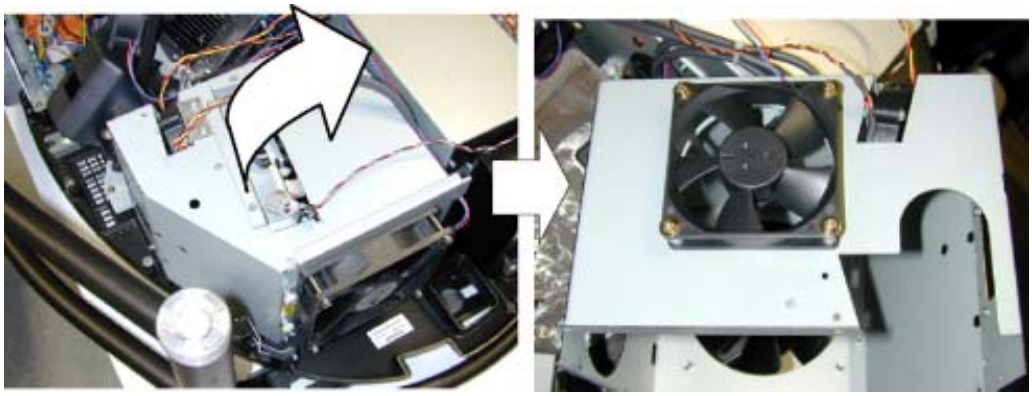


Image 8-40
Access to rear fan on lamp house

8.11.2 Replacement of the Light pipe

8.11.2.1 Light pipe Removal

How to remove the light pipe

1. Remove the 2 screws (A) securing the light pipe protection cover to base plate. (image 8-41)
2. Remove the protection cover.
3. Remove the 4 screws (A) securing the light pipe to base plate. (image 8-42)
4. Remove the light pipe.

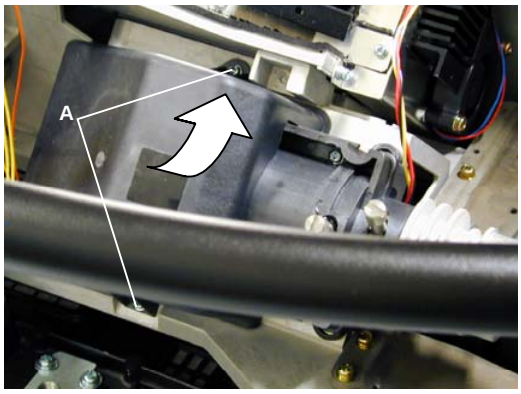


Image 8-41
Light pipe protection cover removal

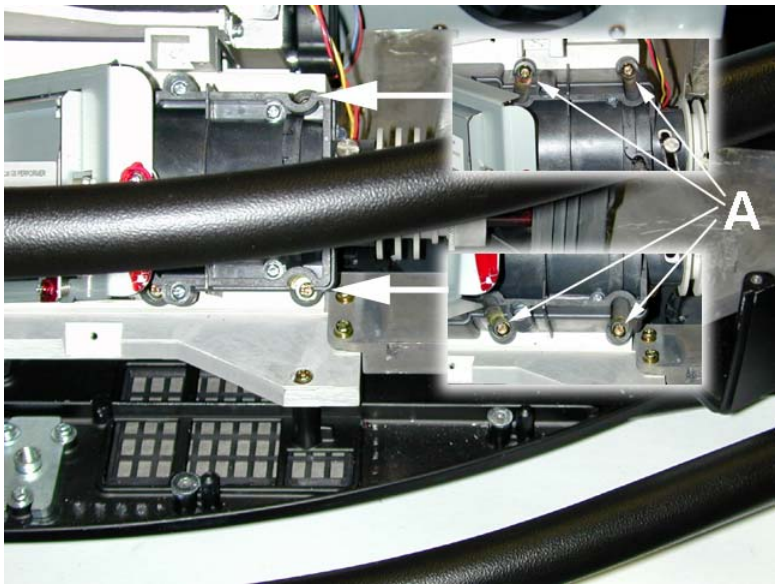


Image 8-42
Light pipe removal

8.11.2.2 Light pipe Mounting

How to mount the light pipe

1. Place the light pipe on the base plate, lining up the fixation holes with the holes in the base plate and reuse the 4 screws to secure (image 8-42).
2. Put the protection cover back on its place and reuse the 2 screws to secure (image 8-41).

8.12 Cold mirror

How to replace the cold mirror

1. Remove the 2 screws securing the cold mirror bracket to projector base. (image 8-43)
2. Install the new cold mirror (Order No kit: **B401040K**) unit and reuse the 2 screws to secure on projector base.
3. Proceed to the adjustment of the cold mirror position (see "Light Pad adjustment", page 73).

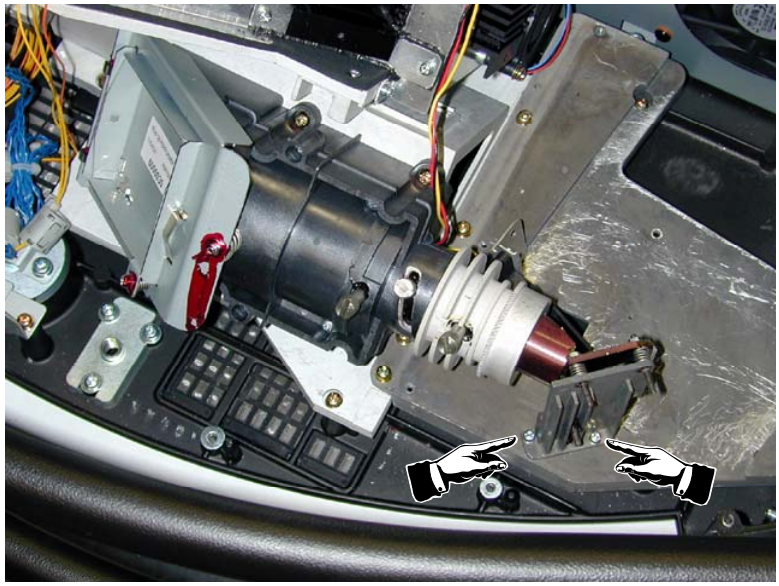


Image 8-43
Replacement of the cold mirror

9. TECHNICAL BOARD INFORMATION

Overview

- Power Supply Circuit
- Random Boards

9.1 Power Supply Circuit

9.1.1 Overview Power Supply Circuit

Block diagram

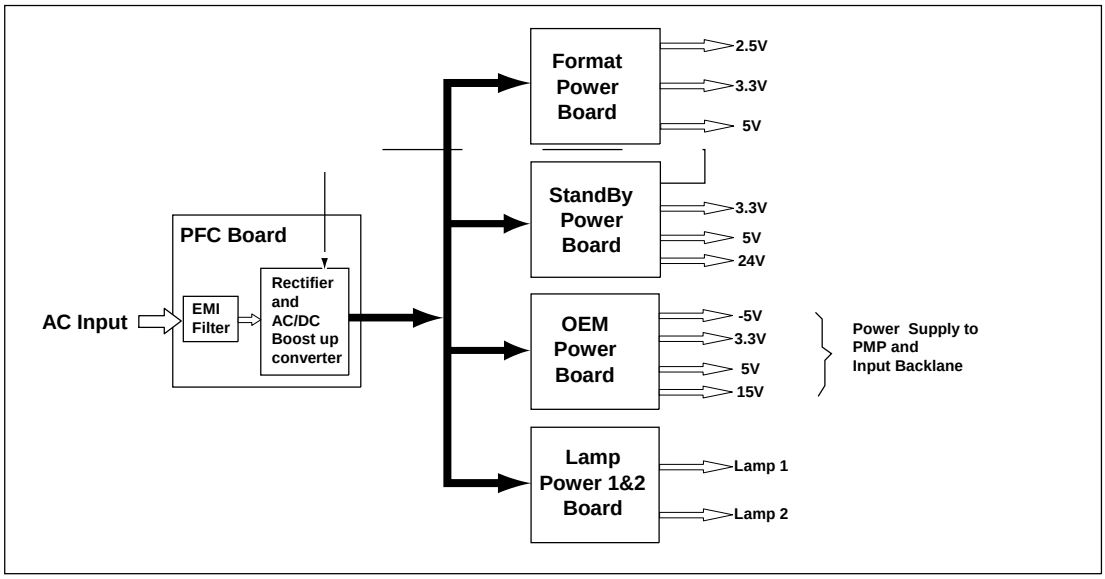


Image 9-1
Block diagram Power Supply circuit

Overview

The power supply circuit consists of the Format, OEM, StandBy power board and a PFC board. As shown in the block diagram, the system required voltage is converted from the Format, OEM, StandBy power board, and the output voltage DC380V of PFC board is applied to the lamp power, and other power boards.

9.1.2 PFC (Power Factor Correction)

Block Diagram

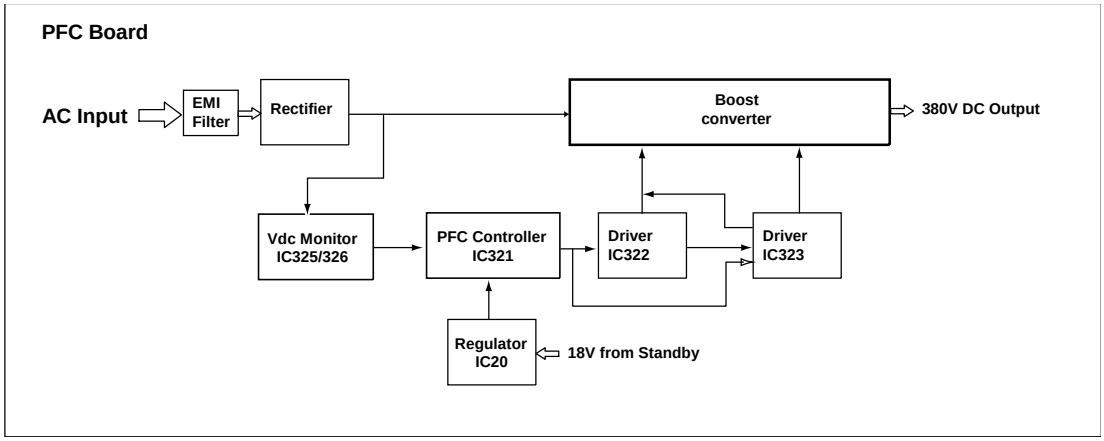


Image 9-2
Block diagram PFC

Description

PFC board is main for shaping the AC input line current waveform to correspond to that of the AC input line voltage, and boost input rectified voltage to 380V DC for preregulator, it consist of EMI filter, rectifier, boost converter, dual driver, V DC monitor and PFC controller.

Line voltage can directly input from 90V AC to 264V AC and boost to 380V DC for the output, there are differential choke L1, L3, common choke FL2, and CX2, CX3 capacitors to form a EMI filter that can reduce noise and interference, then fed through retifier CR1 to filter capacitor C810.

The PFC boost converter operated at average mode control and using new zero-current-zero-voltage switched (ZC-ZVS) active snubber circuit that includes snubber inductor L802, clamp diode D802, clamp capacitor C803, C804, main switch Q801 and auxiliary switch Q802. ZC-ZVS techniques can reduce the reverse-recovery-related losses of rectifier and also provides soft switching of main switch (Q801) turns off with ZCS, whereas the auxiliary switch (Q802) turns on with ZVS, it is noticed that Q802 is turned on after Q801 being turned on, and both of them are using IGBT. This application is shown to be significantly improved the conversion efficiency especially at low line operation.

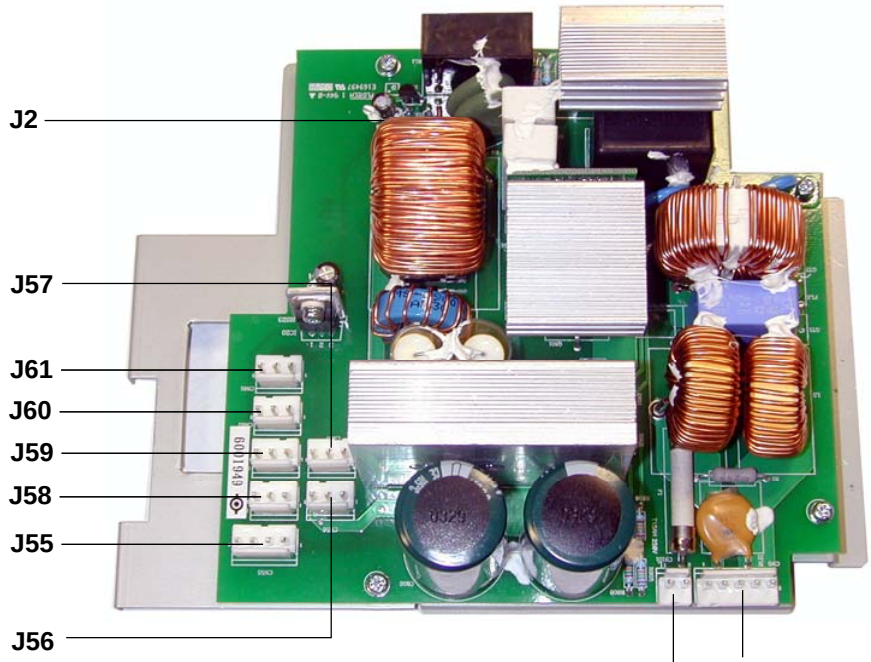
The output of the PFC controller IC321 is fed into dual driver IC322 and IC323, the same phase of output from IC322 and IC323 are together drive to main switch Q801. The signal after delayed is in series with IC322 and IC323 then fed to drive auxiliary switch Q802. The power supply +15V for IC321 comes from standby and through regulator IC20.

IC321 provides all the function necessary for active power factor corrected preregulator, such as voltage error amplifier (pin 7 & 11), multiplier (pins 5, 6, 7 & 8), current amplifier (pin 3, 4 & 5), oscillator (pin 12 & 14), power limit (pin 2) and OVP (pin 10, under 1.9V DC is active), reference voltage (7.5V DC at pin 9) and pin 16 for the output.

When over current or short circuit occurs at 380V DC output, minus voltage drop accross R811 an R812 will be detected, and trigger pin 2 of IC321 to stop PFC operation immediately. If over voltage happens at 380V DC output, voltage at pin 10 of IC321 will be increase at the same time, IC327 is triggered, Q322 and Q357 turn on and operate as a SCR latched, so voltage at pin 10 of IC321 is clamped to ground to stop PFC operation.

IC325/326 act as protection to stop PFC operation while low line voltage is detected. It will force pin 10 below 1.9V DC voltage, trigger IC321 to OVP and stop PFC operation immediately.

Pin assignment Connectors on Board



J2 (nc)
1 ++15V StdBy
2 GND P*

J57 (nc)
1 380V
2 nc
3 GND P*

J61
1 380V
2 nc
3 GND P*

J60
1 380V
2 nc
3 GND P*

J5
1/2 Mains (L)
3 nc
4/5 Mains (N)

J59
1 380V
2 nc
3 GND P*

J58
1 380V
2 nc
3 GND P*
4 ++15V StdBy

J55
1 380V
2 nc
3 GND P*

J56 (nc)
1 380V
2 nc
3 GND P*

J101
1 Power Switch
2 Power Switch

** Primary ground*

Image 9-3
Pin assignment connectors on board

9.1.3 Format Power board

Block diagram

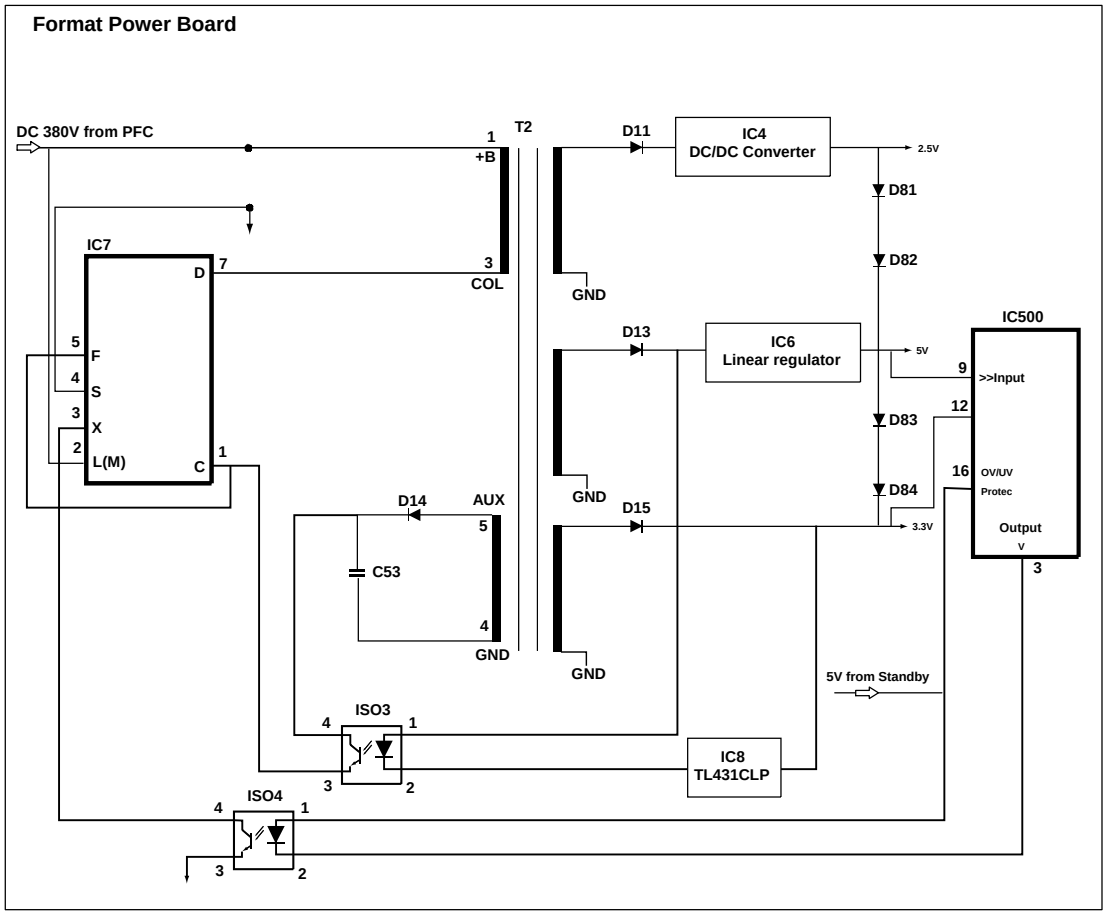


Image 9-4
Block diagram Format power board

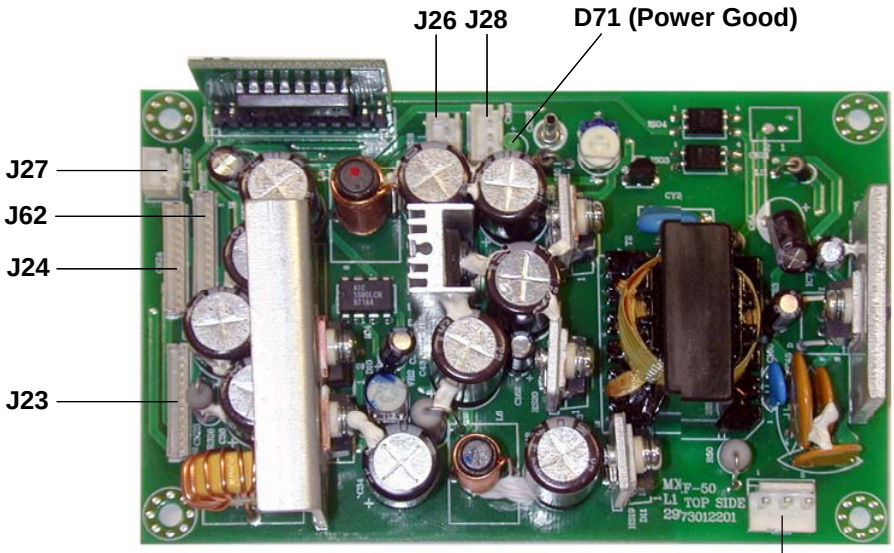
Description

The format power board repeats operation which turns on an off at pin 7 of IC7, and the pulse appears in secondary sides through the converter transformer T2. At the time, the voltage of 3.3V at the secondary side is detected by IC8, the negative feedback to IC7 is carried out at photo coupler ISO3 and then the voltage is stabilized. Other outputs are determined by the turn ratio of secondary side of T2, and the voltage rectified, smoothed through the series regulator (5V is stabilized at IC6, 2.5V is stabilized at IC4). The voltage rectified ans smoothed by D14 and C53 at primary winding of T2 is supplied as a power supply voltage of IC7 on primary side.

The format power board is a flyback voltage mode controlled and switched by a hybrid IC7, which has 6 pins that includes pi 5 (F) for frequency setting (short to C is 66kHz, to S is 132kHz); pin 7 (D) for drain of MOSFET; pin 4 (S) fo source of MOSFET; pin 2 (L) for line sense; pin 3 (X) for external current limit (on-off controls, current limiting) and pin 1 (C) 5.7Vdc for control feedback. Main control loop comes from 3.3Vdc output that was connected to error amplifier IC3, isolated photo-coupler ISO3 and feedback to control pin 1 in the primary side. In addition, the others output also regulated by dropper and dc-to-dc converter for +5V and +2.5V separately.

IC500 is a protection IC for sensing OV and UV in the output voltage. Once abnormal voltage was detected , it will be shut down the IC7 by ISO4 immediately.

Pin assignment Connectors on Board



J26
1 ++5V
2 GND

J28
1 PG
2 /PD
3 GND

J27
1 ++5V
2 GND

J23
1 +5Va
2 GND
3/4 3.3Va
5/6 GND
7 2.5Va
8 2.5Va
9 2.5Va
10/11/12 GND

J24
1 +5Va
2 GND
3/4 3.3Va
5/6 GND
7 2.5Va
8 2.5Va
9 2.5Va
10/11/12 GND

J62
1 +5Va
2 GND
3/4 3.3Va
5/6 GND
7 2.5Va
8 2.5Va
9 2.5Va
10/11/12 GND

J20
1 375V
2 NC
3 GND P*

** Primary ground*

Image 9-5
Pin assignment connectors on board

9.1.4 OEM Power Board

Block diagram

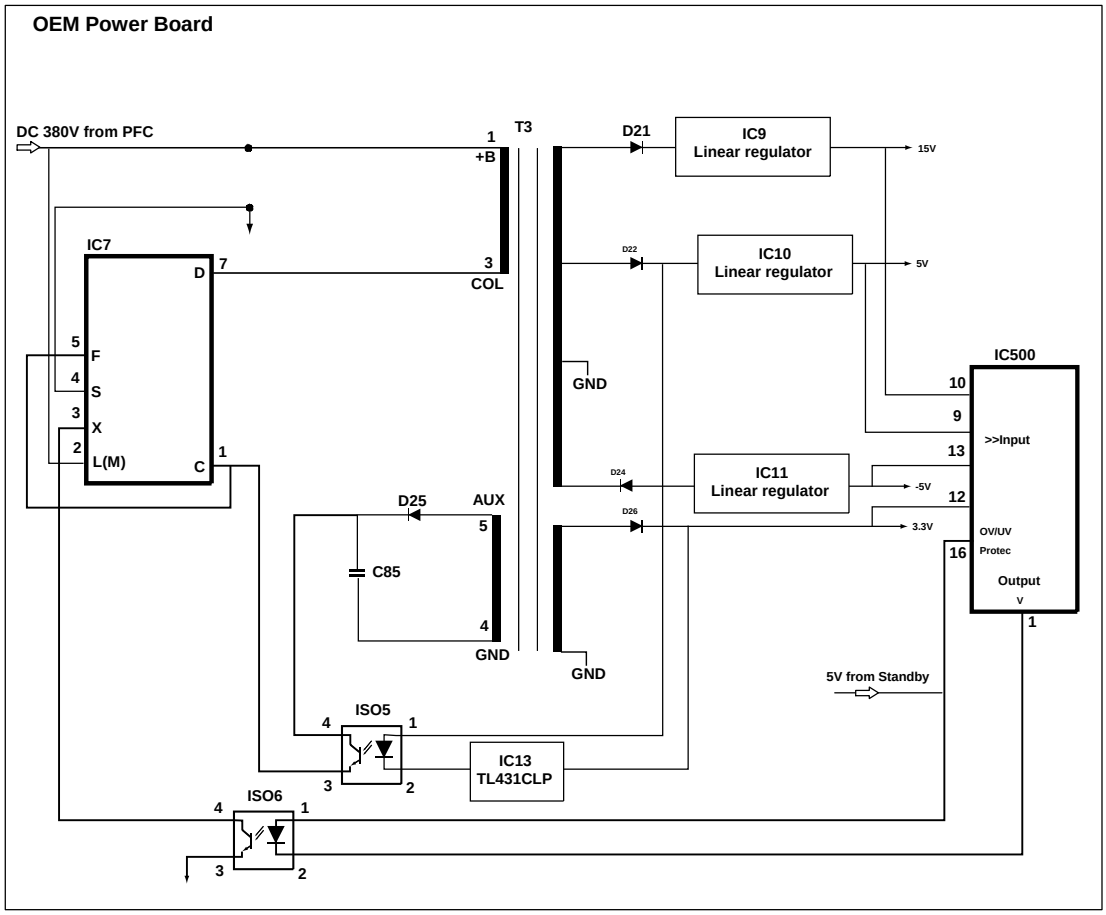


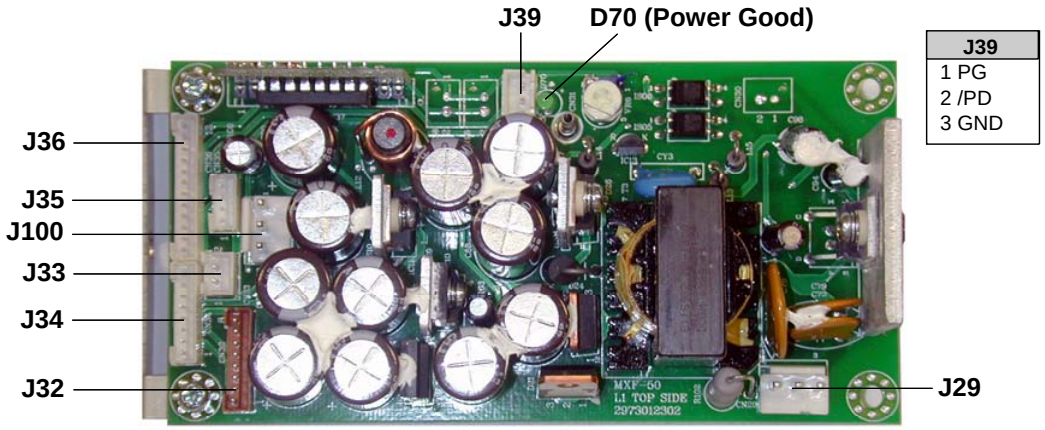
Image 9-6
Block diagram OEM power board

Description

The OEM power board repeats operation which turns on and off at pin 7 pf IC12, and the pulse appears in secondary sides through the converter transformer T3. At the time, the voltage of 3.3V at the secondary side is detected by IC13, the negative feedback to IC12 is carried out at photo coupler ISO5 and then the voltage is stabilized.

Other outputs are determined by the turn ratio of secondary side of T3, and the voltage rectified, smoothed through the series regulators (-5V is stablized at IC11, 5V is stabilized at IC10, 15V is stabilized at IC9). The voltage rectified and smoothed by D25 and C85 at primary windings of T3 is supplied as a power supply voltage of IC12 on primary side.

Pin assignment Connectors on board



J39
1 PG
2 /PD
3 GND

J36
1-5 3.3V (3.5A)
6 3.3V sense+
7 3.3V sense -
8-12 GND

J35
1 3.3V (1.5A)
2 3.3V (1.5A)
3 GND
4 GND

J100
1 +15V
2 +5V
3 GND

J33
1 ++5V (1A)
2 GND

J34
1-2 GND
3 -5V (0.2A)
4-5 +5V (1.3A)
6 GND
7 + 15V (0.5A)
8 GND

J32
1 +15V (0.5A)
2/4/6/8 GND
3 +5V 0.7A
5 -5V 0.2A
7 ++5V (1A)

J29
1 375V
2 NC
3 GND P*

** Primary ground*

Image 9-7
Pin assignment connectors on board

9.1.5 StandBy Power Supply board

Block diagram

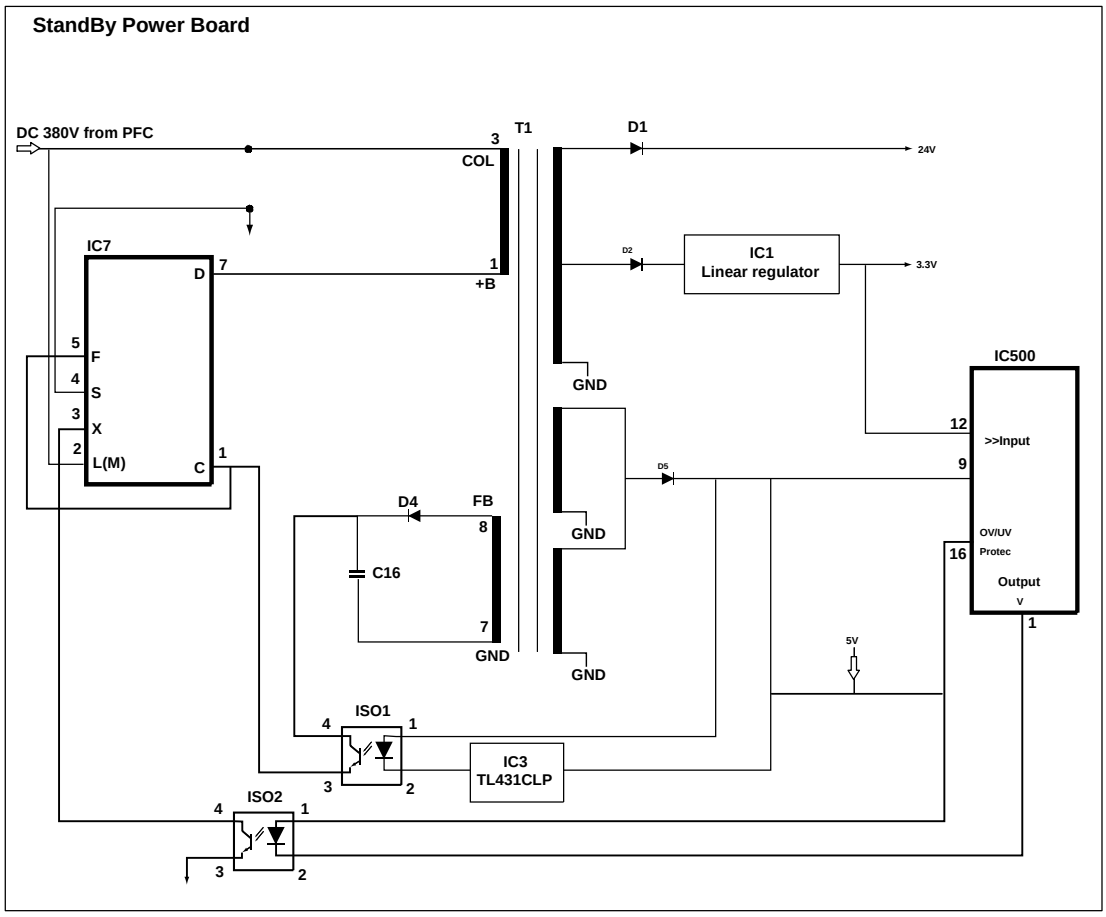


Image 9-8
Standby power supply

Description Standby power board

The standby power board repeats operation which turns on and off at pin 7 of IC2, and the pulse appears in secondary sides through the converter transformer T1. At the time, the voltage of 5V at the secondary side is detected by IC3, the negative feedback to IC2 is carried out at photo coupler ISO1, and the voltage is stabilized. Other outputs are determined by the turn ratio of secondary side of T1, and the voltage rectified, smoothed through the series regulator (3.3V is stabilized at IC1). On the one hand the voltage rectified and smoothed by D4 and C16 at primary winding of T1 is supplied as a power supply voltage of IC2 on primary side, and on the other the voltage of 18V rectified and smoothed By D7 and C28 at primary winding of T1 and stabilized to 15V at IC20 is supplied as a power supply voltage of IC321 on primary side.

The operation of IC2 is similar to that of IC7 described previously.

Over-Voltage Protection (OVP)

The output voltages of -5V, 3.3V, 5V and 15V are sensed by the pin 13, pin 12, pin 9, pin 10 of IC500 on DNA control board. When these output voltages are more than 124% of their standard value, the over-voltage protection is created. For example, on the format DC-DC converter the pin 1 of IC500 will be high and the pin 3 of IC500 will be low then the photo coupler ISO4 will turn off. So the pin 3 of IC7 is open and IC7 stops to oscillate. The process of over-voltage protection on standby and OEM DC-DC converter is the same with the OVP on format DC-DC converter. When the voltage of 2.5V exceeds 3.6V the four series diode D81, D82, D83 and D84 will turn on, then the pin 12 of IC500 will sense the OVP, and IC7 stops to oscillate. When the voltage of 24V exceeds 42V the zener diode D85 turns on, then the high voltage make the voltage of 3.3V create the over-voltage protection.

Short Circuit Protection

On -5V, 3.3V, 5V and 15V lines, the short circuit protection is carried out by detecting the voltage drop at pin 13, pin 12, pin 9 and pin 10 of IC500, then the under-voltage protection (UVP) is created when the output voltages are less than 80% of their standard value. For example, on the OEM power board the pin 1 of IC500 will be high and the pin 3 of IC500 will be low, the photo coupler ISO6 will turn off. The the pin 3 of IC12 is open and IC12 stops to oscillate. The process of under-voltage protection on standby and format power boardis the same with the UVP on OEM power board. So that the process of short circuit protection is in the same way as the over-voltage protection described previously, and the short circuit protection is carried out.

Pin assignment Connectors on Board

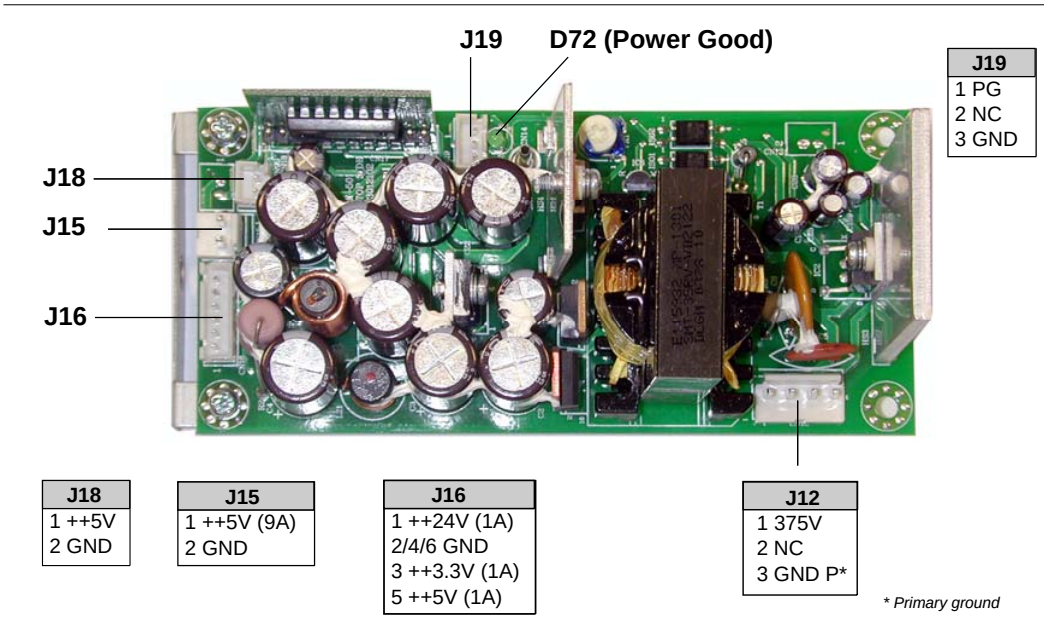
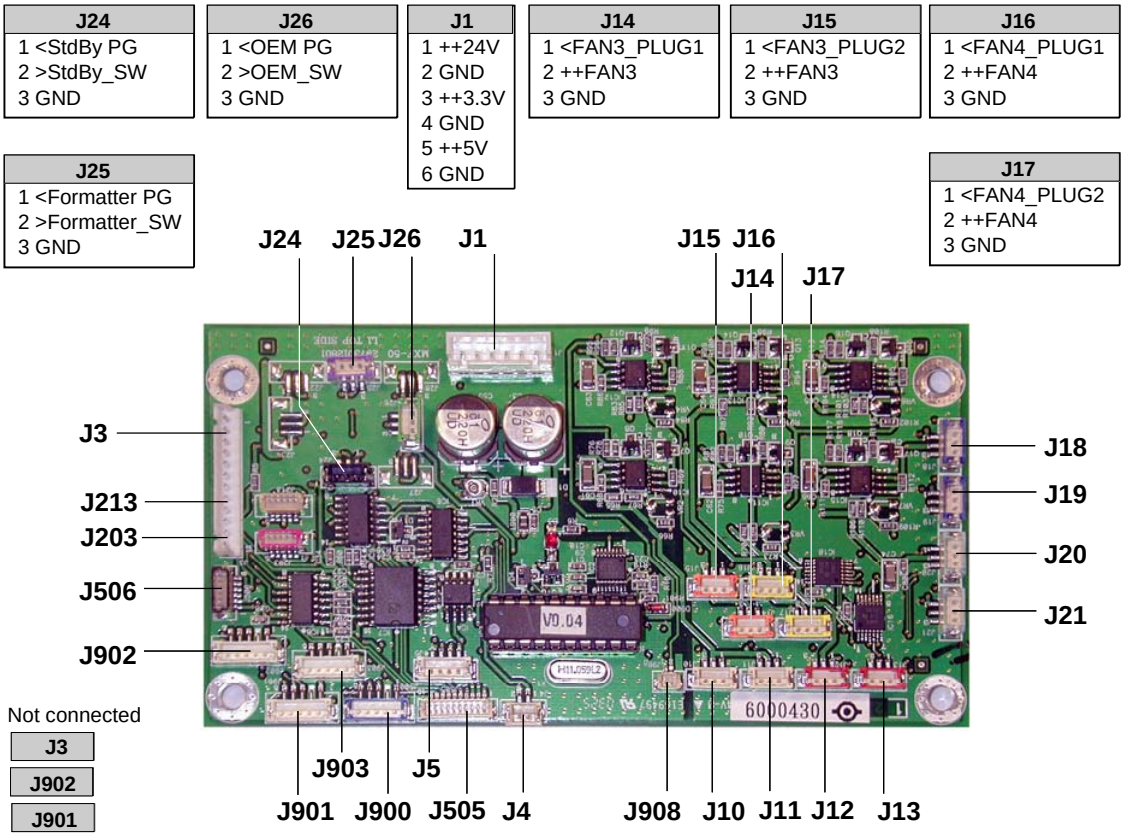


Image 9-9
Pin assignment connectors on board

9.1.6 MCU Board

Pin assignment Connectors on Board



J24	
1	<StdBy PG
2	>StdBy_SW
3	GND

J26	
1	<OEM PG
2	>OEM_SW
3	GND

J1	
1	++24V
2	GND
3	++3.3V
4	GND
5	++5V
6	GND

J14	
1	<FAN3_PLUG1
2	++FAN3
3	GND

J15	
1	<FAN3_PLUG2
2	++FAN3
3	GND

J16	
1	<FAN4_PLUG1
2	++FAN4
3	GND

J25	
1	<Formatter PG
2	>Formatter_SW
3	GND

J17	
1	<FAN4_PLUG2
2	++FAN4
3	GND

Not connected

J3
J902
J901
J903
J5
J908

J900	
1	++5V
2	GND
3	>SCL_0
4	>SDA_0
5	R_GND

J505	
1	++5V
2	>SDA_StdBy
3	>SCL_StdBy
4	reserved
5	<n-PWR_INT
6	>RXD1
7	>RXD2
8	<TXD1
9	<TXD2
10	GND

J4	
1	Lamp_Overtemp_Sense
2	GND

J908	
1	VDAC_TEC1
2	GND

J18	
1	<FAN5_PLUG1
2	++FAN5
3	GND

J19	
1	<FAN5_PLUG2
2	++FAN5
3	GND

J20	
1	<FAN1_CTRL1
2	++FAN1
3	GND

J203	
1	<Lamp1_Off
2	GND
3	++5V
4	>SCI1
5	>UHP_RXD1

J21	
1	<FAN1_CTRL2
2	++FAN1
3	GND

J10	
1	<FAN6_PLUG1
2	++FAN6
3	GND

J11	
1	<FAN6_PLUG2
2	++FAN6
3	GND

J506	
1	++5V
2	GND
3	>LampSync
4	>Lamp_enable
5	<Lamp_status
6	<Powergood_++3.3_1

J213	
1	<Lamp2_Off
2	GND
3	++5V
4	>SCI2
5	>UHP_RXD2

J12	
1	<FAN2_CTRL1
2	++FAN2
3	GND

J13	
1	<FAN2_CTRL2
2	++FAN2
3	GND

Image 9-10
Pin assignment connectors on board

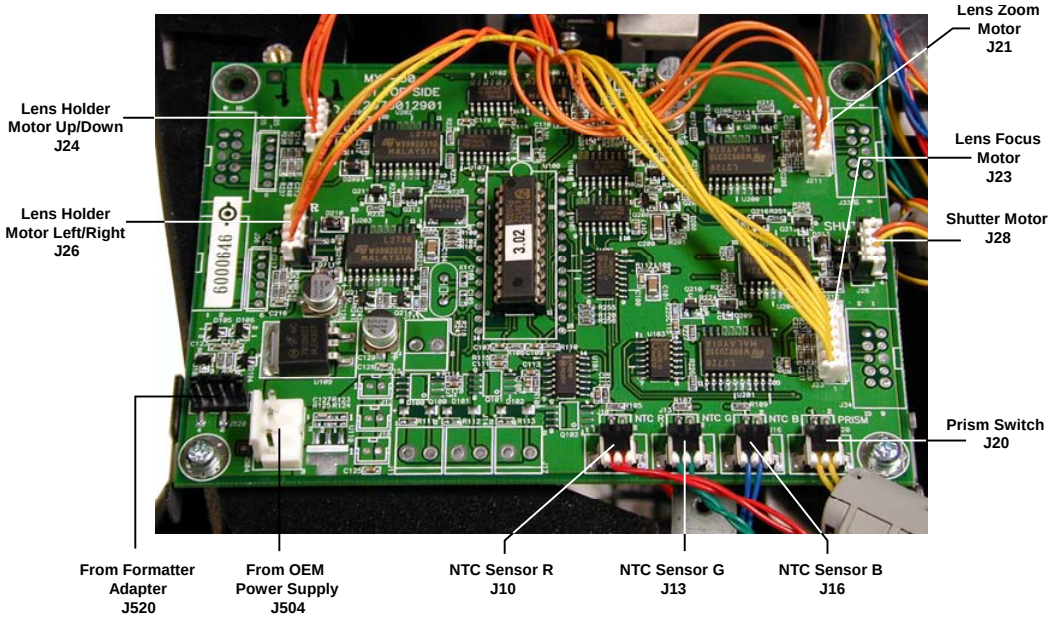
9.2 Random Boards

Overview

- Motor/Control Board
- Input Box Backplane
- Lamp Power Supply
- Pixel Map Processor Board
- Formatter Interface Board
- KeyPad
- LED + IR Board

9.2.1 Motor/Control Board

Pin assignment Connectors on Board


Lens Zoom Motor J21
Lens Holder Motor Up/Down J24
Lens Focus Motor J23
Lens Holder Motor Left/Right J26
Shutter Motor J28
Prism Switch J20
From Formatter Adapter J520
From OEM Power Supply J504
NTC Sensor R J10
NTC Sensor G J13
NTC Sensor B J16

J520	J504	J24	J26	J20	J10/13/16	J28	J21	J23
1 IRQ DMD	1 +15V	1 D Rev	1 D Rev	1 +5VD	1 +5VD	1 D Rev	1 Mtr Fwd	1 Mtr Fwd
2 SDA	2 +5VD	2 REV	2 REV	2 GND	2 GND	2 REV	2 +5VD	2 +5VD
3 SCL	3 GND	3 FW	3 FW			3 FW	3 Cha A	3 Cha A
4 GND		4 D Fw	4 D Fw			4 D Fwd	4 Cha B	4 Cha B
							5 GND	5 GND
							6 Mtr Rev	6 Mtr Rev

Image 9-11
Pin assignment connectors on board

9.2.2 Input Box Backplane

Pin assignment Connectors on Input Backplane

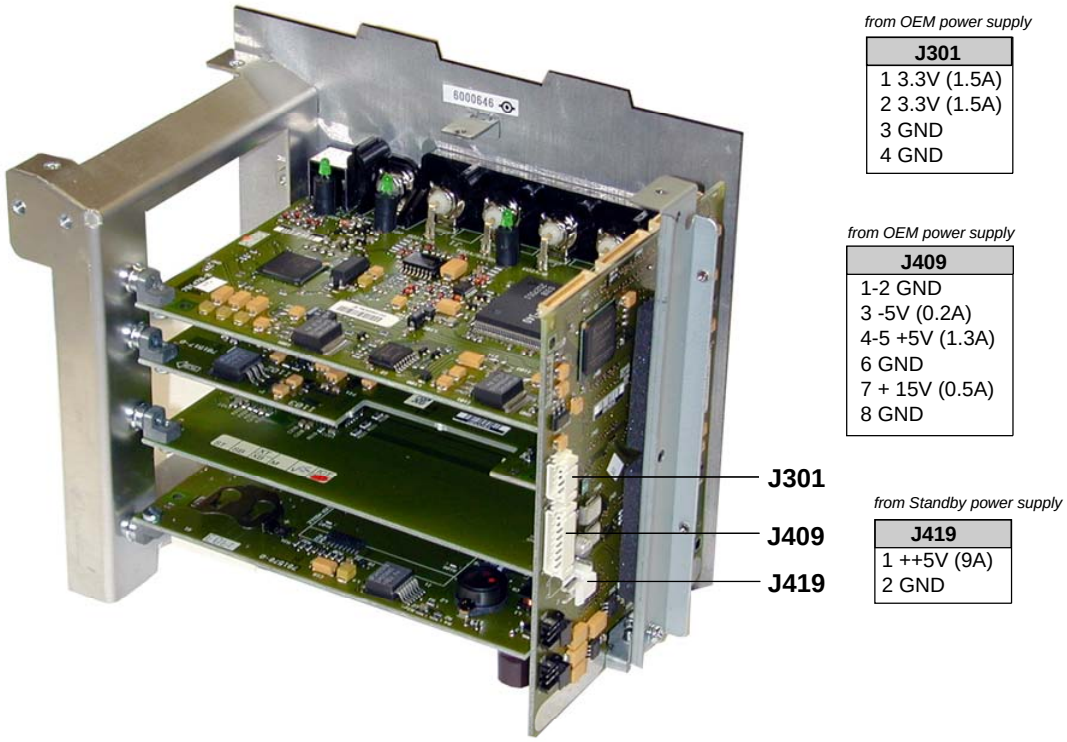


Image 9-12
Pin assignment connectors on input backplane

9.2.3 Lamp Power Supply

Pin assignment Connectors on Board

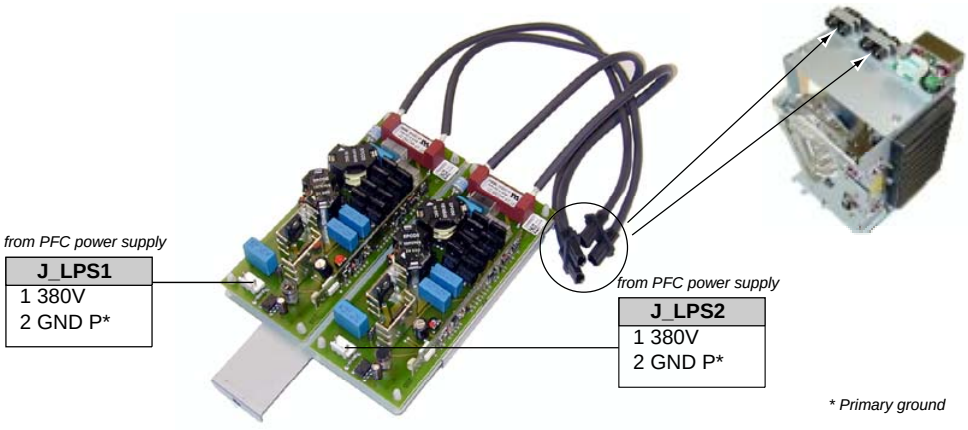


Image 9-13

9.2.4 Pixel Map Processor Board

Pin assignment Connectors on Board

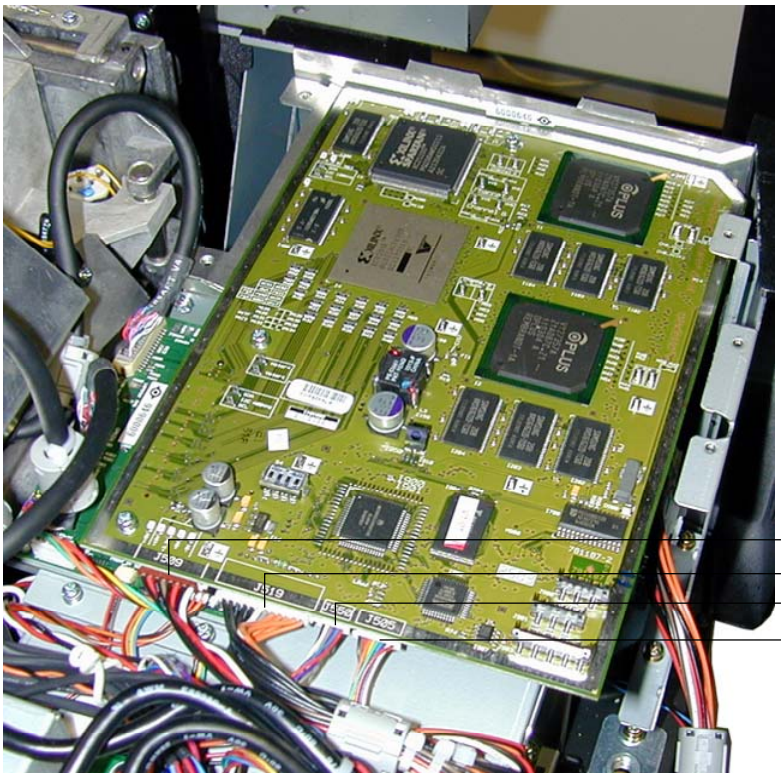


Image 9-14
Pin assignment connectors on board

9.2.5 Formatter Interface Board

Pin assignment Connectors on Board

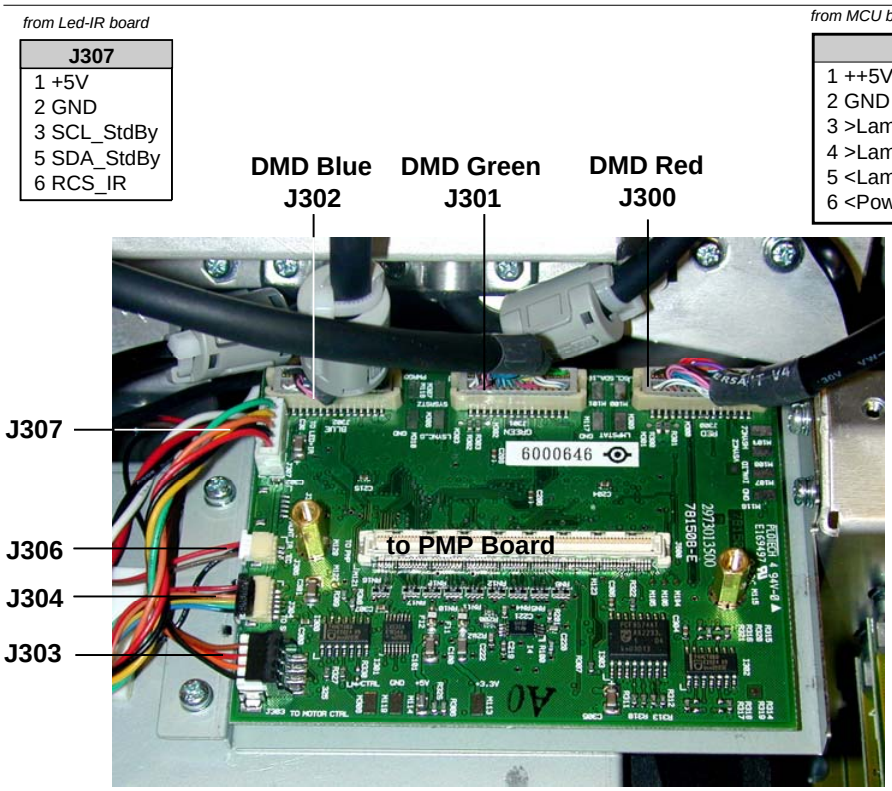


Image 9-15
Pin assignment connectors on Formatter interface board

9.2.6 KeyPad

Pin assignment Connectors on Board

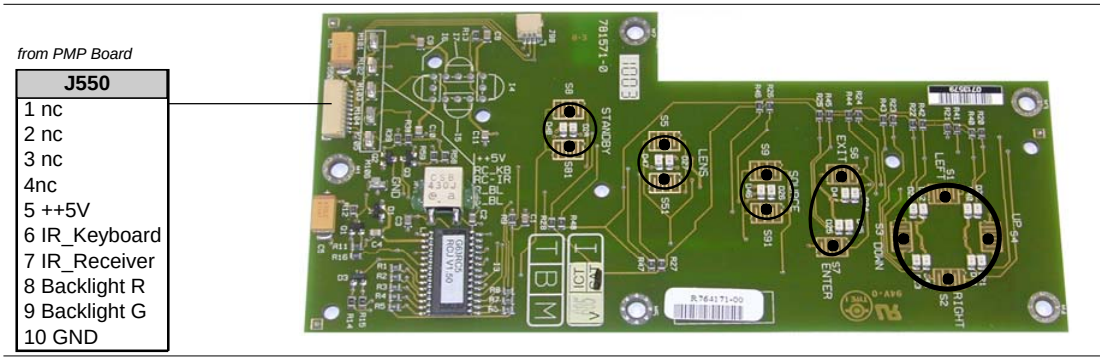
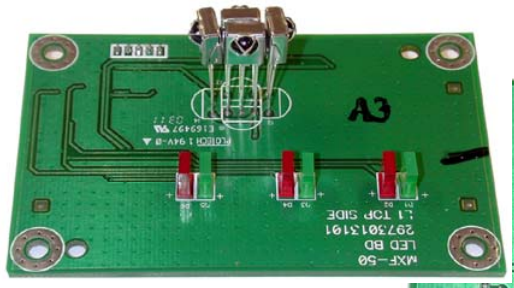
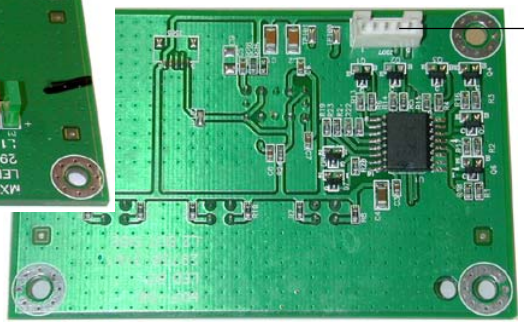


Image 9-16
Pin assignment connector on keypad

9.2.7 LED + IR Board

Pin assignment Connectors on Board





from Formatter interface board

J307
1 +5V
2 GND
3 SCL_StdBy
5 SDA_StdBy
6 RCS_IR

Image 9-17
Pin assignment connector on LED+IR board

10. MECHANICAL PARTS IDENTIFICATION

Overview

- Projector Lamp box
- Projector Power Box
- Shutter
- Projector Input Box
- Lens Holder
- Rigging Assembly
- Projector Bottom Assembly
- Projector Top Cover Assembly
- Projector Front Assembly
- Projector Assembly

10.1 Projector Lamp box

Exploded view

The exploded view of the lamp box is added by way of illustration.

ITEM	REF.	DESCRIPTION	QUANTITY
2633	3105 280 800	SCREW M M3*0.5*25 NON-H HEXI S	3
2634	3110 111 100	CASE NUT M3*0.5 S20C	3
2636	3250 204 000	MIRROR IR FILTER BOROFLOAT HEX	1
2637	3422 001 300	SPACER SUPPORT NY66 94V2	4
2638	3455 033 001	BRACKET SECC T=0.8 LBOX WALL	1
2639	3455 033 300	BRACKET SECC T=0.8 LBOX DOOR	1
2640	3455 033 401	BRACKET SECC T=0.8 LBOX SLOT	1
2641	3455 033 501	BRACKET SECC T=1.0 BALAST PLUG	1
2642	3455 033 601	BRACKET SECC T=0.8 LBOX CHANNEL	1
2643	3455 034 400	PLATE MIRROR AL	1

ITEM	REF.	DESCRIPTION	QUANTITY
2644	3455 034 500	BRACKET MIRROR W TILT AL	1
2645	3455 035 002	PLATE SUPPORT RM LAMP AL	1
2646	3455 049 300	BARCKET AL5052 T0.8 FAN FIXER TO	1
2647	3455 049 400	BRACKET AL5052 T0.8 FAN FIXER BTM	1
2649	3462 004 500	SPRING SUS304 ID5.0 H12 MIRROR	3
2650	3620 005 811	DC FAN ASSY WFB1212M-R00 (450)	1
2708	3620 618 811	DC FAN ASS GB1206PHV1-AY-R00	2
2709	3620 822 511	DC FAN ASSY AFB0812MD-R00 (300)	1
2756	3797 037 400	LAMP ASSY	1

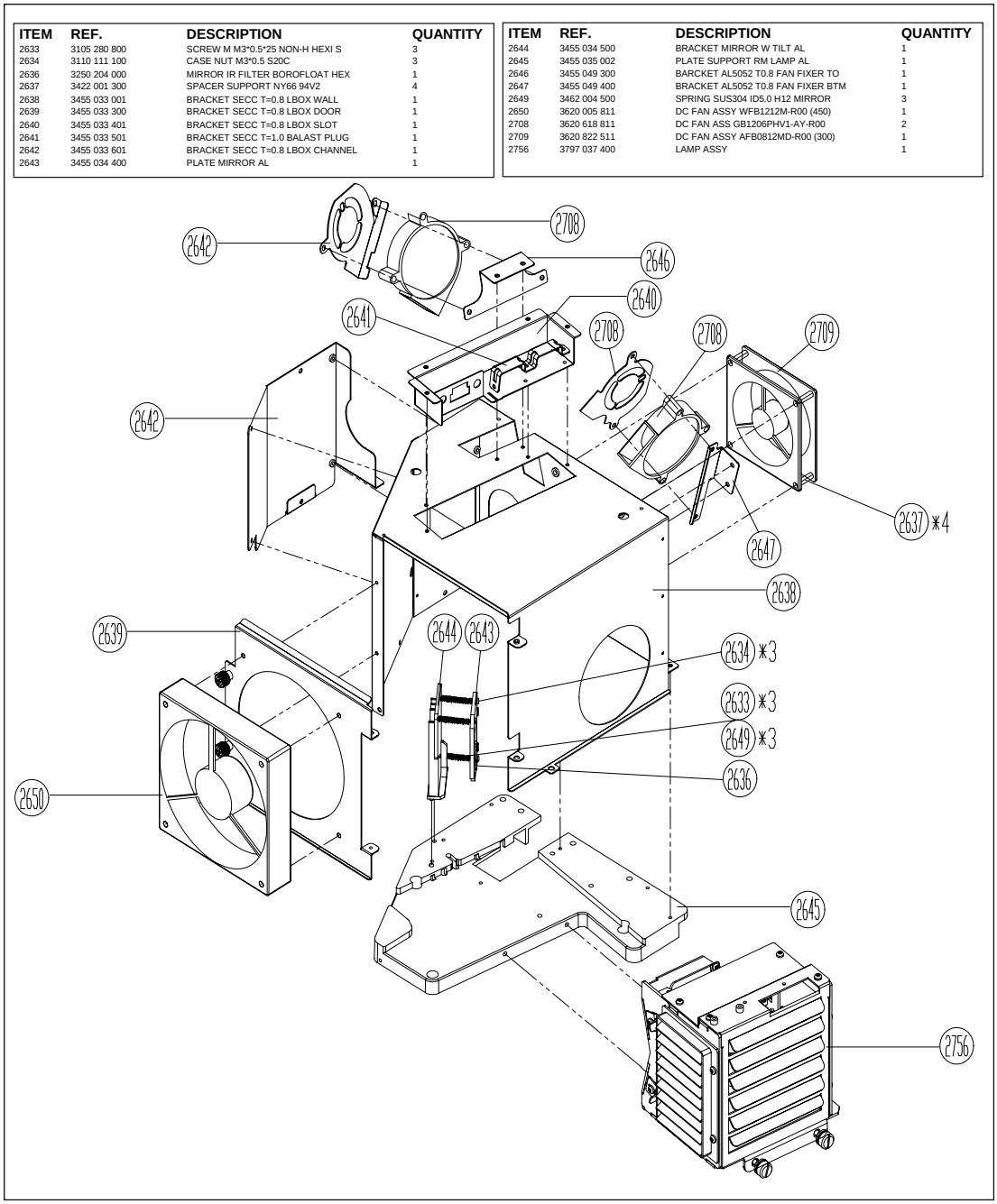


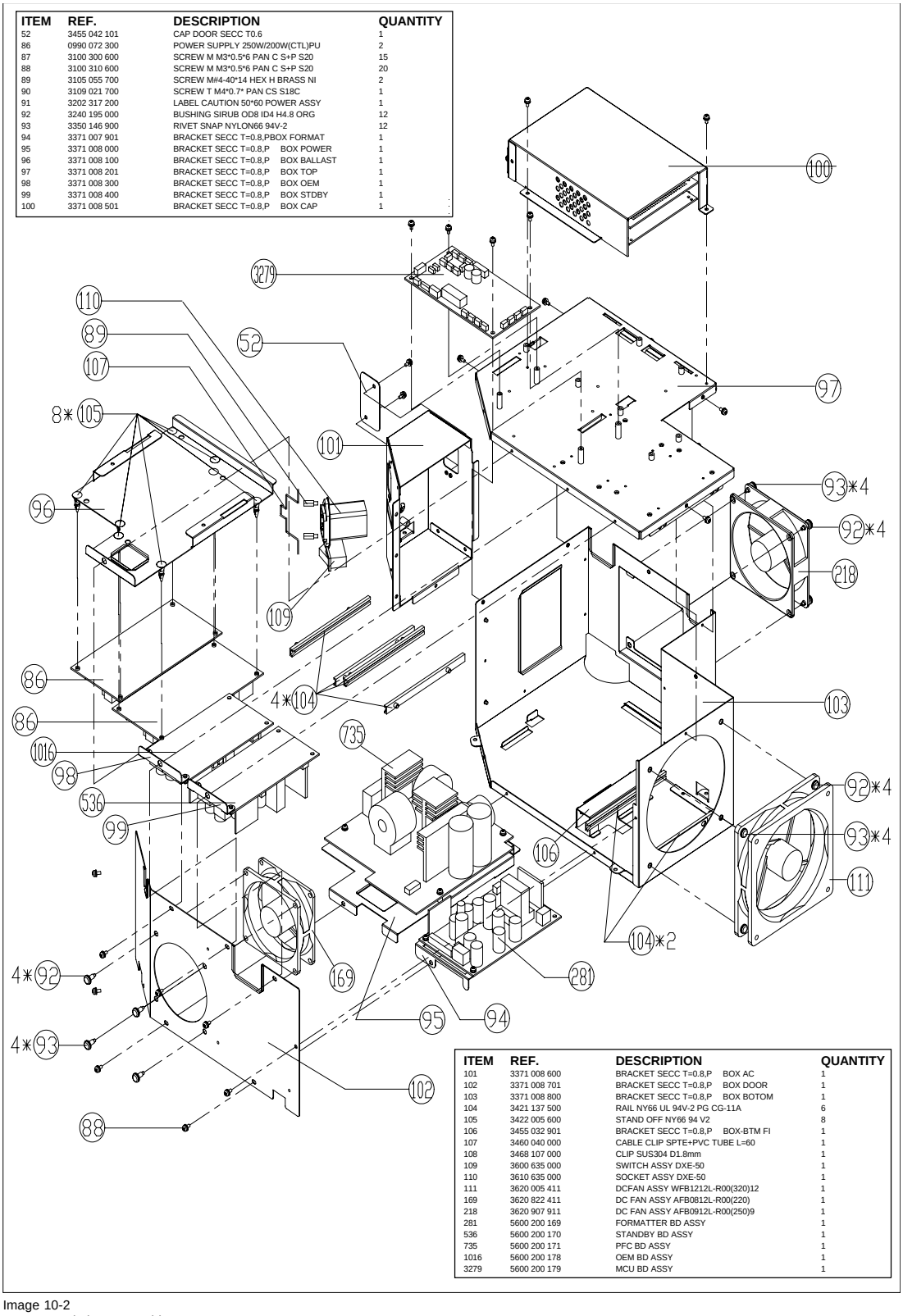
Image 10-1
Lamp box exploded view

10.2 Projector Power Box

Exploded view

The exploded view of the power box is added by way of illustration.

ITEM	REF.	DESCRIPTION	QUANTITY
52	3455 042 101	CAP DOOR SECC T0.6	1
86	0990 072 300	POWER SUPPLY 250W/200W(CTL)PU	2
87	3100 300 600	SCREW M M3*0.5*6 PAN C S+P S20	15
88	3100 310 600	SCREW M M3*0.5*6 PAN C S+P S20	20
89	3105 055 700	SCREW M#4-40*14 HEX H BRASS NI	2
90	3109 021 700	SCREW T M4*0.7* PAN CS S18C	1
91	3202 317 200	LABEL CAUTION 50*60 POWER ASSY	1
92	3240 195 000	BUSHING SIRUB OD8 ID4 H4.8 ORG	12
93	3350 146 900	RIVET SNAP NYLON66 94V-2	12
94	3371 007 901	BRACKET SECC T=0.8,PBOX FORMAT	1
95	3371 008 000	BRACKET SECC T=0.8,P BOX POWER	1
96	3371 008 100	BRACKET SECC T=0.8,P BOX BALLAST	1
97	3371 008 201	BRACKET SECC T=0.8,P BOX TOP	1
98	3371 008 300	BRACKET SECC T=0.8,P BOX OEM	1
99	3371 008 400	BRACKET SECC T=0.8,P BOX STDBY	1
100	3371 008 501	BRACKET SECC T=0.8,P BOX CAP	1

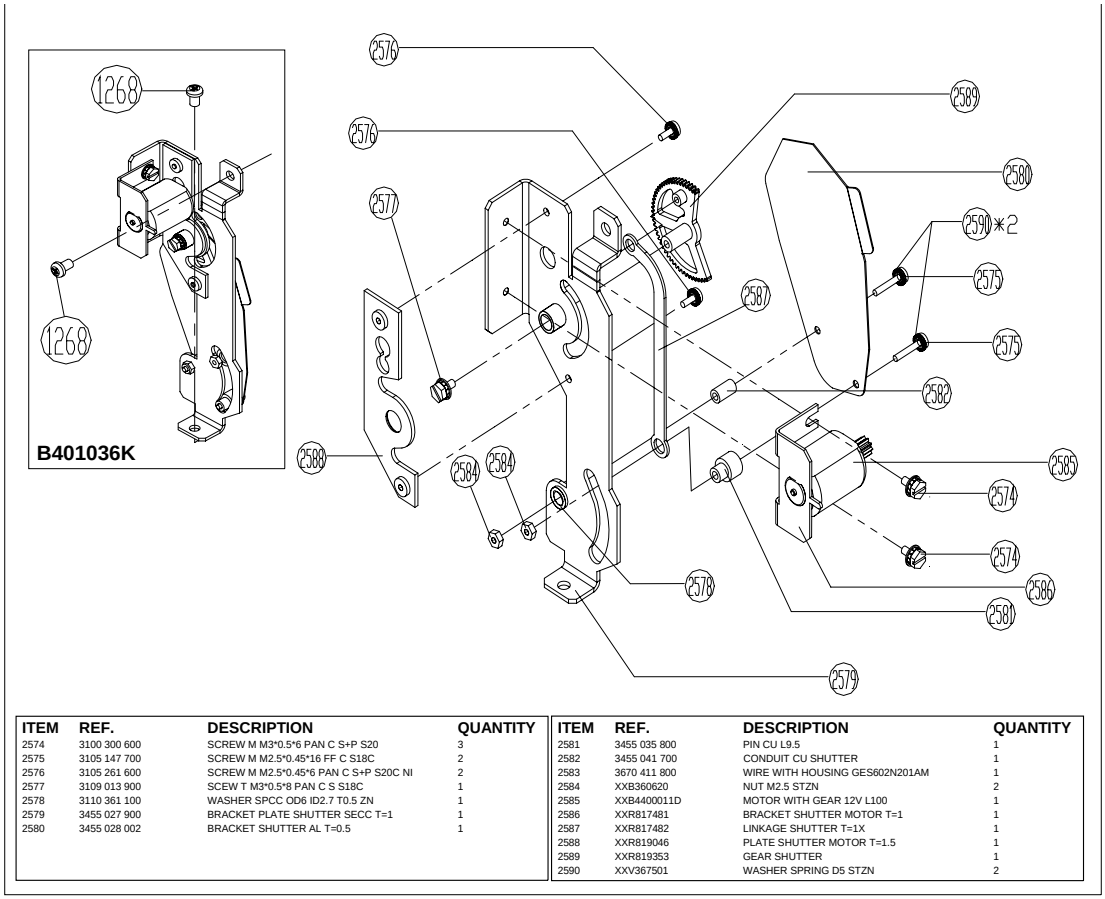


ITEM	REF.	DESCRIPTION	QUANTITY
101	3371 008 600	BRACKET SECC T=0.8,P BOX AC	1
102	3371 008 701	BRACKET SECC T=0.8,P BOX DOOR	1
103	3371 008 800	BRACKET SECC T=0.8,P BOX BOTOM	1
104	3421 137 500	RAIL NY66 UL 94V-2 PG CG-11A	6
105	3422 005 600	STAND OFF NY66 94 V2	8
106	3455 032 901	BRACKET SECC T=0.8,P BOX-BTM FI	1
107	3460 040 000	CABLE CLIP SPTE+PVC TUBE L=60	1
108	3468 107 000	CLIP SUS304 D1.8mm	1
109	3600 635 000	SWITCH ASSY DXE-50	1
110	3610 635 000	SOCKET ASSY DXE-50	1
111	3620 005 411	DCFAN ASSY WFB1212L-R00(320)12	1
169	3620 822 411	DC FAN ASSY AFB0812L-R00(220)	1
218	3620 907 911	DC FAN ASSY AFB0912L-R00(250)9	1
281	5600 200 169	FORMATTER BD ASSY	1
536	5600 200 170	STANDBY BD ASSY	1
735	5600 200 171	PFC BD ASSY	1
1016	5600 200 178	OEM BD ASSY	1
3279	5600 200 179	MCU BD ASSY	1

Image 10-2
Power supply box assembly

10.3 Shutter

Exploded view



ITEM	REF.	DESCRIPTION	QUANTITY
2574	3100 300 600	SCREW M M3*0.5*6 PAN C S+P S20	3
2575	3105 147 700	SCREW M M2.5*0.45*16 FF C S18C	2
2576	3105 261 600	SCREW M M2.5*0.45*6 PAN C S+P S20C NI	2
2577	3109 013 900	SCEW T M3*0.5*8 PAN C S S18C	1
2578	3110 361 100	WASHER SPCC OD6 ID2.7 T0.5 ZN	1
2579	3455 027 900	BRACKET PLATE SHUTTER SECC T=1	1
2580	3455 028 002	BRACKET SHUTTER AL T=0.5	1

ITEM	REF.	DESCRIPTION	QUANTITY
2581	3455 035 800	PIN CU L9.5	1
2582	3455 041 700	CONDUIT CU SHUTTER	1
2583	3670 411 800	WIRE WITH HOUSING GES602N201AM	1
2584	XXB360620	NUT M2.5 STZN	2
2585	XXB4400011D	MOTOR WITH GEAR 12V L100	1
2586	XXR817481	BRACKET SHUTTER MOTOR T=1	1
2587	XXR817482	LINKAGE SHUTTER T=1X	1
2588	XXR819046	PLATE SHUTTER MOTOR T=1.5	1
2589	XXR819353	GEAR SHUTTER	1
2590	XXV367501	WASHER SPRING D5 STZN	2

Image 10-3
Exploded view of the Shutter assembly

10.4 Projector Input Box

Exploded view

The exploded view of the lamp box is added by way of illustration.

ITEM	REF.	DESCRIPTION	QUANTITY
2820	3797 037 500	Input box assembly	1
2821	3100 000 600	SCREW M M3*0.5*6 FLAT C S20C ZN	4
2822	3100 300 600	SCREW M M3*0.5*6 PAN C S+P S20C ZN	18
2823	3109 012 100	SCREW T 3*1.27*6 PAN C S20C	3
2824	3109 093 500	SCREW T 2.6*0.9*8 PAN C S20C NI	1
2825	3240 971 900	SPONGE PORON L32C 40*12*6	1
2826	3371 007 702	BRACKET I/O AL5052 T1.5 161*14	1
2827	3455 023 900	FRAME SIDE SECC T=1.0F/C	1
2828	3455 024 601	FRAME I/O AL5052 T1.5 125*104	1
2829	3455 046 400	PLATE ADAPTER SECC 112.6*74.1	1
2830	3455 046 500	BRACKET SECC 135.2*20 T.6	2

ITEM	REF.	DESCRIPTION	QUANTITY
2831	3461 413 300	STAND OFF BRASS M3*0.5 L34+4	2
2832	3461 414 900	STAND OFF BRASS M3*5 L12+4	2
2833	5600 200 181	VIDEO BOARD ASSEMBLY	1
2834	5600 200 182	VGA BOARD ASSEMBLY	1
2835	5600 200 183	I/P BACKPLANE BOARD ASSEMBLY	1
2836	5600 200 184	PIXEL MAP PROCESSOR BOARD ASSY	1
2837	5600 200 246	SDI BOARD ASSEMBLY	1
2838	5600 200 250	XLR BOARD ASSEMBLY	1
2839	XXB337229	CONNECTOR XLR PLUG	1
2840	XXR804658	FRAME PCB FIX DPL	4
2841	XXV3125035	NUT#4-40 D-SUB	6
2842	XXZ3495032	WIRE WITH HOUSING WLR L60	1

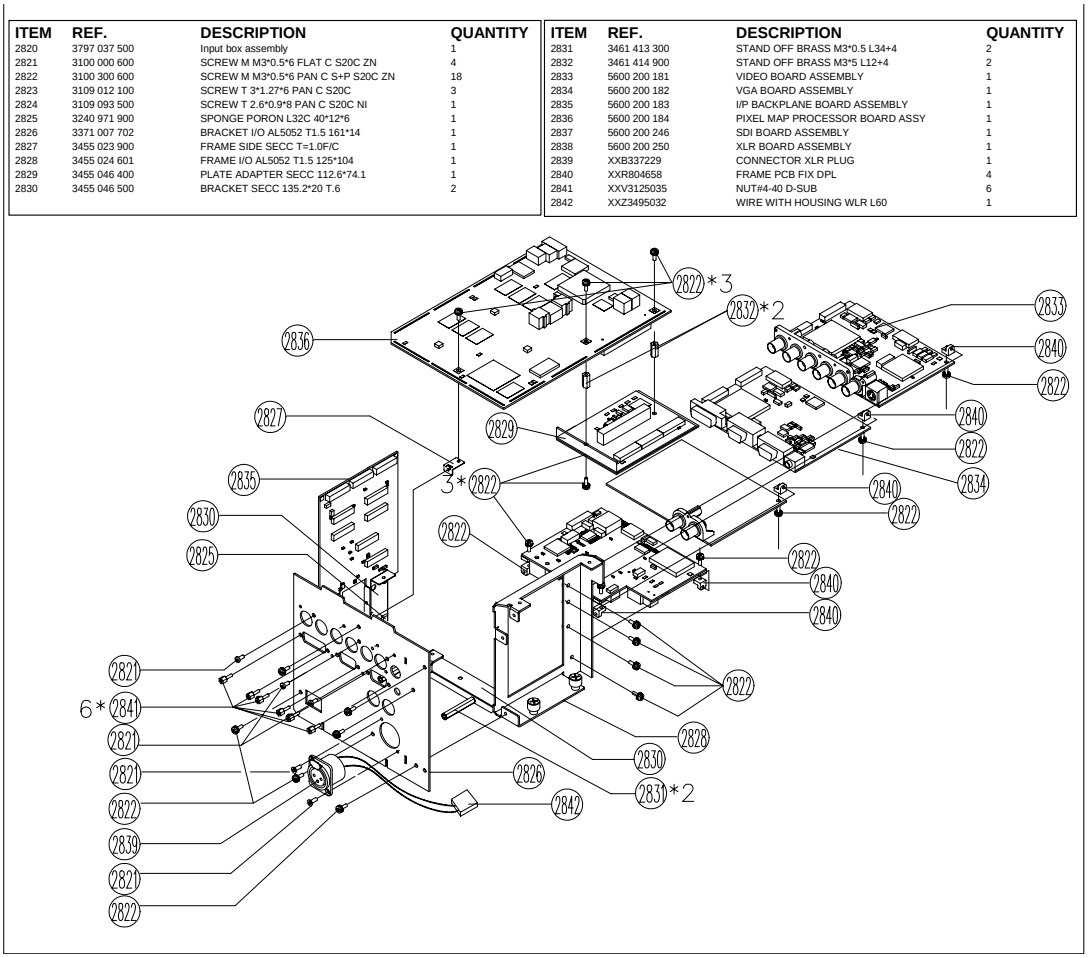


Image 10-4
Exploded view Input box

10.5 Lens Holder

Exploded view

ITEM	REF.	DESCRIPTION	QUANTITY
1241	3100 001 600	SCREW M M3*0.5*16 FLAT C S20C	4
1242	3100 300 800	SCREW M M3*0.5*8 PAN C S+P S20	2
1243	3100 310 600	SCREW M M3*0.5*6 PAN C S+P S20	1
1244	3105 049 100	SCREW M M2*0.4*6 FLAT C S10C N	1
1245	3105 120 100	SCREW M M4*0.7*12 PAN C S+P S1	4
1246	3109 013 900	SCREW T M3*0.5*8 PAN C S S18C	2
1247	3109 921 300	SCREW M M3*0.5*3 HEXI S18C	5
1248	3110 113 700	NUT M3*0.5*3.9 SAE1008 HEXH+NY	4
1249	3110 110 100	NUT S17C ZN M3*0.5*2.4	1
1250	3450 000 601	LENS SUPPORT AZ91D BLK OXIDE A	1

ITEM	REF.	DESCRIPTION	QUANTITY
1251	3450 202 400	PLATE TRIP XGA AL T=2.5	1
1252	3455 023 400	BARACKET LENS COVER SECC T=1.0	1
1253	XXB3587466	BEARING BALL R1 D013 W03	1
1254	XXB358747	BUSH D08 D10 L08	1
1255	XXB361346	SPRING D15 L32	3
1256	XXG181500	SCREW SET M3X10	1
1257	XXR366246	NUT D985 M6 STZN	3
1258	XXR814654	FRAME BEARING LENS	1
1259	XXR815224	BUSH AXLE ADJUST	1
1260	XXR817082	FRAME SALVATOR LENS HOLDER	1
1261	XXR829734	FRAME SALVATOR LENS HOLDER	1
1262	XXV3673806	WASHER SPRING D12	6
1263	XXZ3483136	CABLE BRAID L140	2

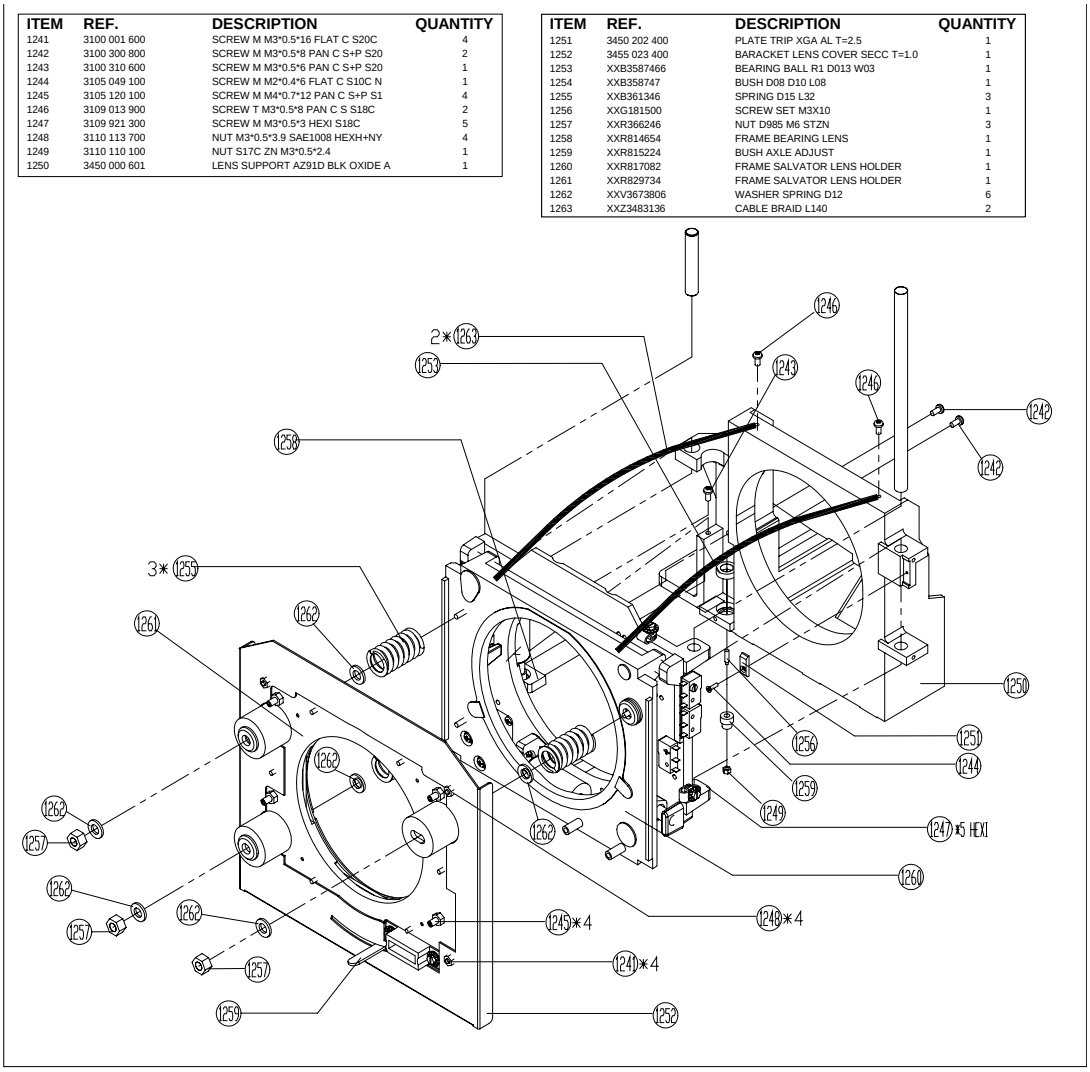
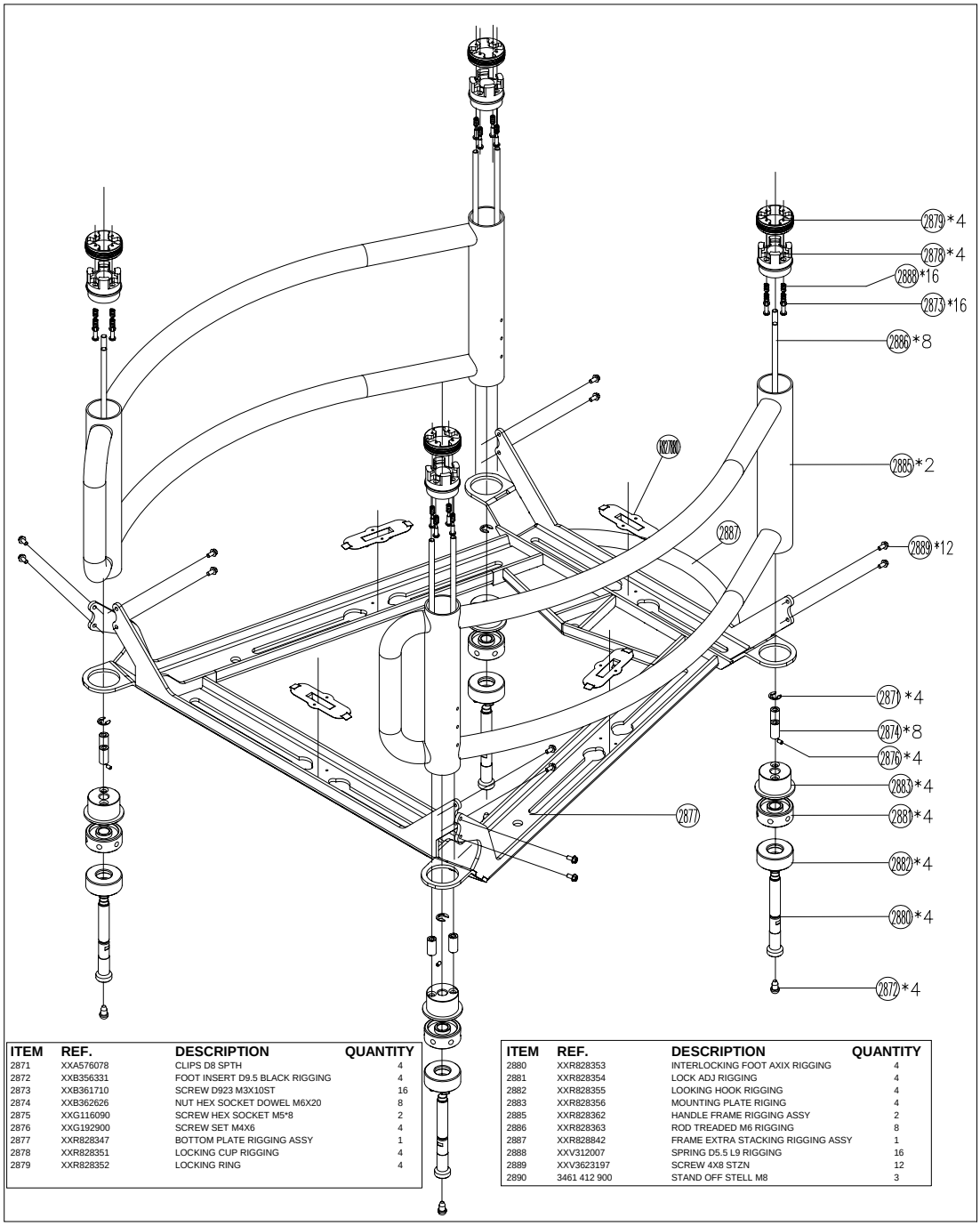


Image 10-5
Exploded view lens holder

10.6 Rigging Assembly

Parts of the Rigging assembly

The exploded view of the lamp box is added by way of illustration.



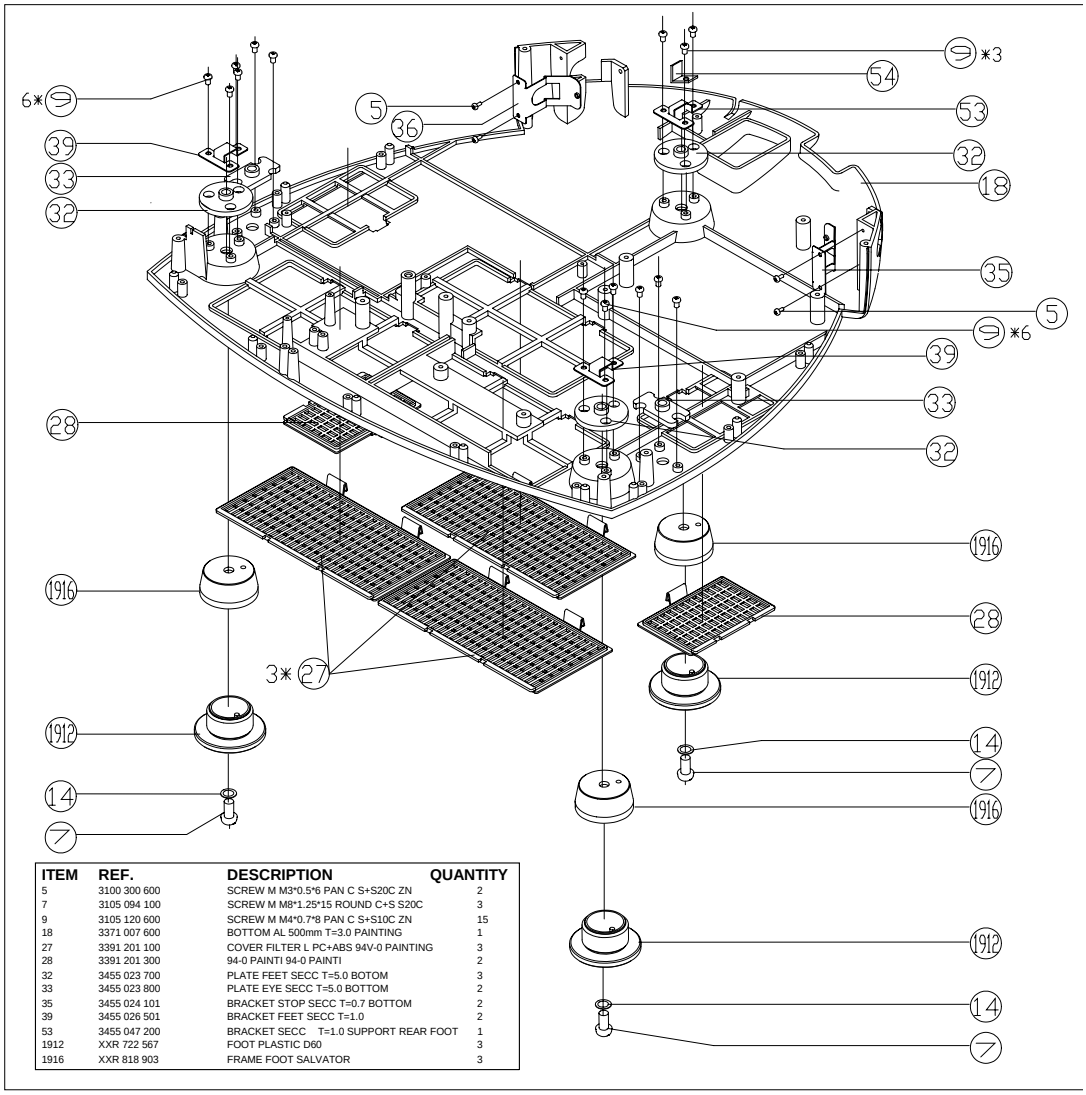
ITEM	REF.	DESCRIPTION	QUANTITY
2871	XXA576078	CLIPS D8 SPTH	4
2872	XXB356331	FOOT INSERT D9.5 BLACK RIGGING	4
2873	XXB361710	SCREW D923 M3X10ST	16
2874	XXB362626	NUT HEX SOCKET DOWEL M6X20	8
2875	XXG116090	SCREW HEX SOCKET M5*8	2
2876	XXG192900	SCREW SET M4X6	4
2877	XXR828347	BOTTOM PLATE RIGGING ASSY	1
2878	XXR828351	LOCKING CUP RIGGING	4
2879	XXR828352	LOCKING RING	4

ITEM	REF.	DESCRIPTION	QUANTITY
2880	XXR828353	INTERLOCKING FOOT AXIX RIGGING	4
2881	XXR828354	LOCK ADJ RIGGING	4
2882	XXR828355	LOOKING HOOK RIGGING	4
2883	XXR828356	MOUNTING PLATE RIGING	4
2885	XXR828362	HANDLE FRAME RIGGING ASSY	2
2886	XXR828363	ROD TREADED M6 RIGGING	8
2887	XXR828842	FRAME EXTRA STACKING RIGGING ASSY	1
2888	XXV312007	SPRING D5.5 L9 RIGGING	16
2889	XXV3623197	SCREW 4X8 STZN	12
2890	3461 412 900	STAND OFF STELL M8	3

Image 10-6
Rigging exploded view

10.7 Projector Bottom Assembly

Parts of the projector bottom assembly

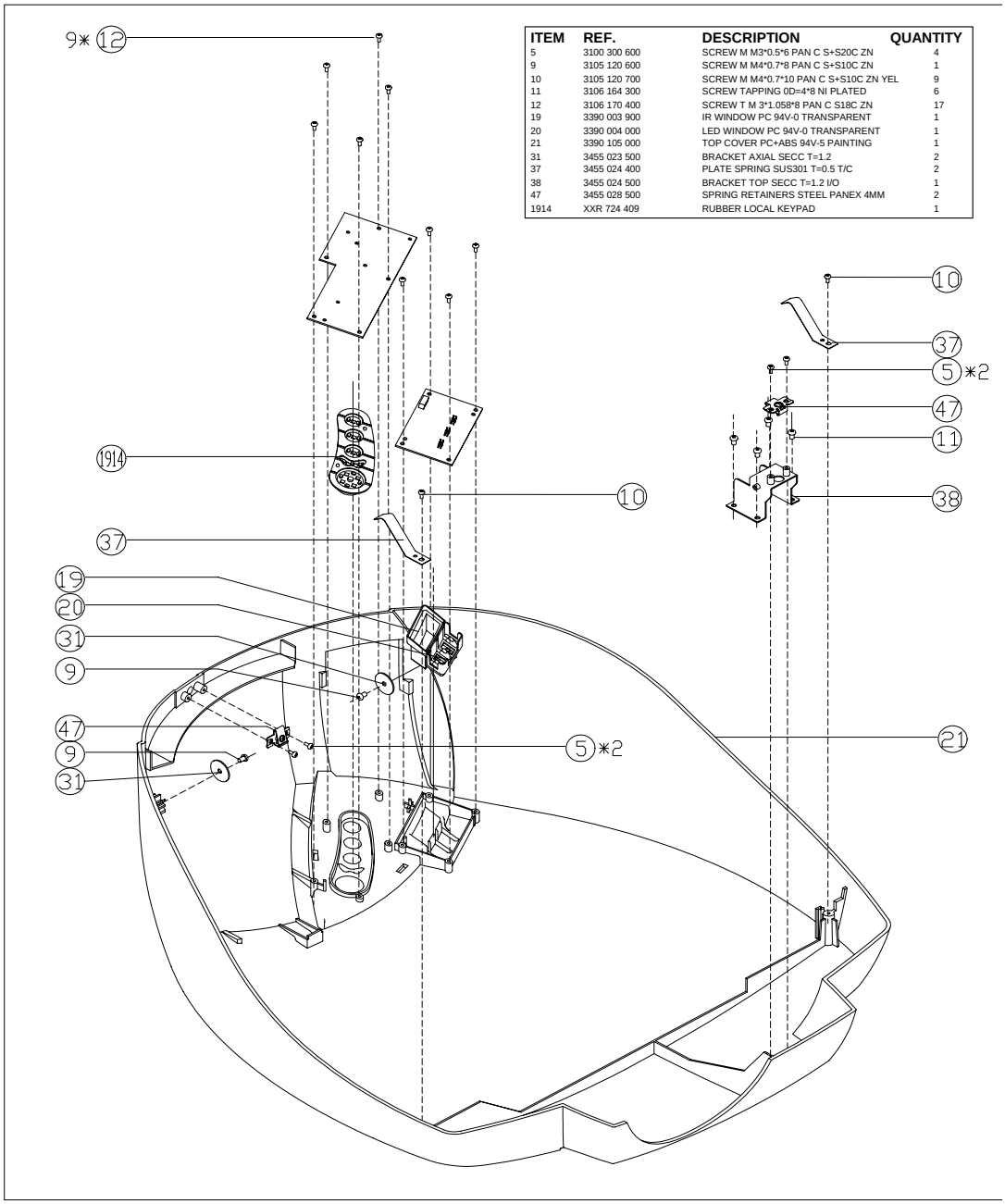


ITEM	REF.	DESCRIPTION	QUANTITY
5	3100 300 600	SCREW M M3*0.5*6 PAN C S+S20C ZN	2
7	3105 094 100	SCREW M M8*1.25*15 ROUND C+S S20C	3
9	3105 120 600	SCREW M M4*0.7*8 PAN C S+S10C ZN	15
18	3371 007 600	BOTTOM AL 500mm T=3.0 PAINTING	1
27	3391 201 100	COVER FILTER L PC+ABS 94V-0 PAINTING	3
28	3391 201 300	94-0 PAINTI 94-0 PAINTI	2
32	3455 023 700	PLATE FEET SECC T=5.0 BOTOM	3
33	3455 023 800	PLATE EYE SECC T=5.0 BOTTOM	2
35	3455 024 101	BRACKET STOP SECC T=0.7 BOTTOM	2
39	3455 026 501	BRACKET FEET SECC T=1.0	2
53	3455 047 200	BRACKET SECC T=1.0 SUPPORT REAR FOOT	1
1912	XXR 722 567	FOOT PLASTIC D60	3
1916	XXR 818 903	FRAME FOOT SALVATOR	3

Image 10-7
Bottom assembly

10.8 Projector Top Cover Assembly

Parts of the projector top assembly



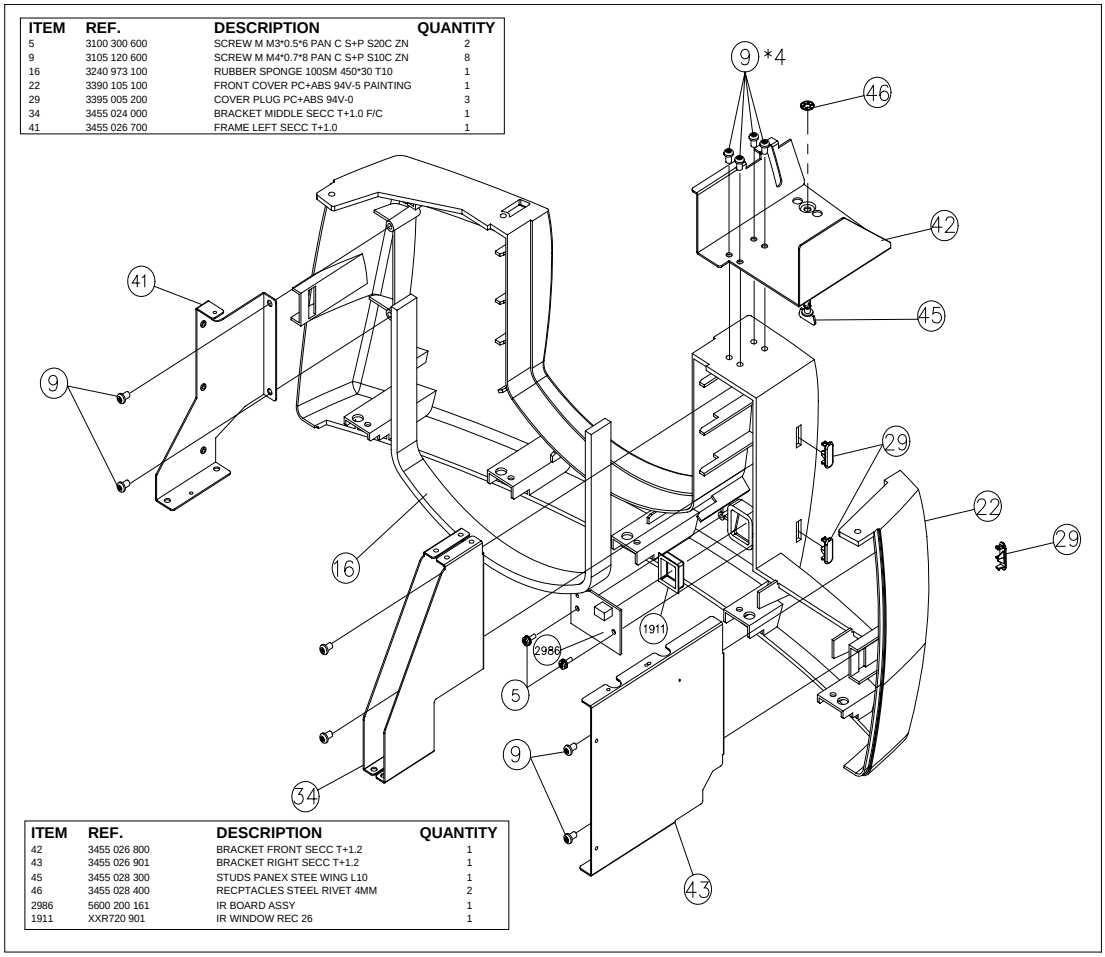
ITEM	REF.	DESCRIPTION	QUANTITY
5	3100 300 600	SCREW M M3*0.5*6 PAN C S+S20C ZN	4
9	3105 120 600	SCREW M M4*0.7*8 PAN C S+S10C ZN	1
10	3105 120 700	SCREW M M4*0.7*10 PAN C S+S10C ZN YEL	9
11	3106 164 300	SCREW TAPPING 0D=4*8 NI PLATED	6
12	3106 170 400	SCREW T M 3*1.058*8 PAN C S18C ZN	17
19	3390 003 900	IR WINDOW PC 94V-0 TRANSPARENT	1
20	3390 004 000	LED WINDOW PC 94V-0 TRANSPARENT	1
21	3390 105 000	TOP COVER PC+ABS 94V-5 PAINTING	1
31	3455 023 500	BRACKET AXIAL SECC T=1.2	2
37	3455 024 400	PLATE SPRING SUS301 T=0.5 T/C	2
38	3455 024 500	BRACKET TOP SECC T=1.2 I/O	1
47	3455 028 500	SPRING RETAINERS STEEL PANEX 4MM	2
1914	XXR 724 409	RUBBER LOCAL KEYPAD	1

Image 10-8
Top cover assembly

10.9 Projector Front Assembly

Parts of the front cover assembly

ITEM	REF.	DESCRIPTION	QUANTITY
5	3100 300 600	SCREW M M3*0.5*6 PAN C S+P S20C ZN	2
9	3105 120 600	SCREW M M4*0.7*8 PAN C S+P S10C ZN	8
16	3240 973 100	RUBBER SPONGE 100SM 450*30 T10	1
22	3390 105 100	FRONT COVER PC+ABS 94V-5 PAINTING	1
29	3395 005 200	COVER PLUG PC+ABS 94V-0	3
34	3455 024 000	BRACKET MIDDLE SECC T+1.0 F/C	1
41	3455 026 700	FRAME LEFT SECC T+1.0	1

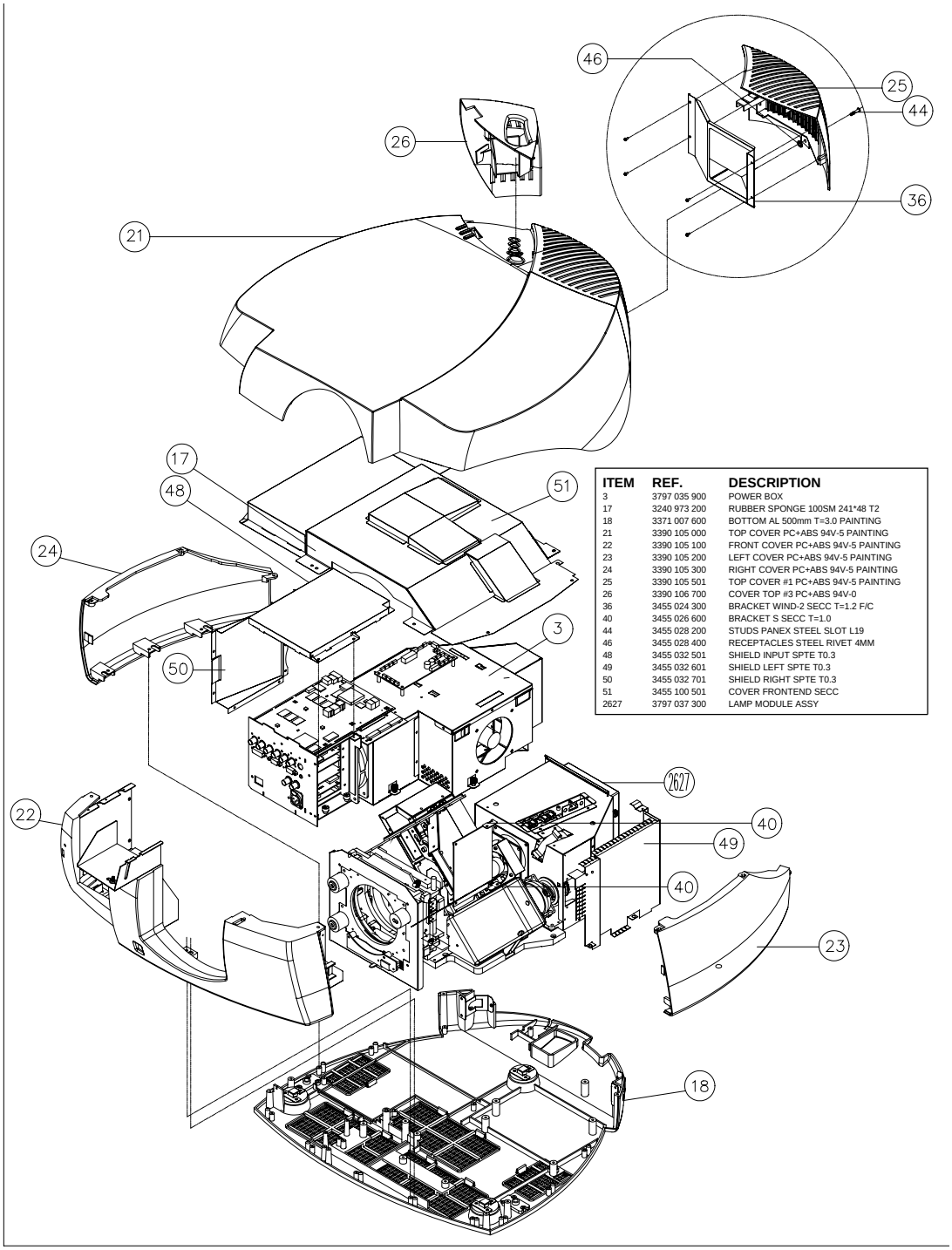


ITEM	REF.	DESCRIPTION	QUANTITY
42	3455 026 800	BRACKET FRONT SECC T+1.2	1
43	3455 026 901	BRACKET RIGHT SECC T+1.2	1
45	3455 028 300	STUDS PANEX STEE WING L10	1
46	3455 028 400	RECPTACLES STEEL RIVET 4MM	2
2986	5600 200 161	IR BOARD ASSY	1
1911	XXR720 901	IR WINDOW REC 26	1

Image 10-9
Front cover exploded view

10.10Projector Assembly

Parts of the projector assembly



ITEM	REF.	DESCRIPTION
3	3797 035 900	POWER BOX
17	3240 973 200	RUBBER SPONGE 100SM 241*48 T2
18	3371 007 600	BOTTOM AL 500mm T=3.0 PAINTING
21	3390 105 000	TOP COVER PC+ABS 94V-5 PAINTING
22	3390 105 100	FRONT COVER PC+ABS 94V-5 PAINTING
23	3390 105 200	LEFT COVER PC+ABS 94V-5 PAINTING
24	3390 105 300	RIGHT COVER PC+ABS 94V-5 PAINTING
25	3390 105 501	TOP COVER #1 PC+ABS 94V-5 PAINTING
26	3390 106 700	COVER TOP #3 PC+ABS 94V-0
36	3455 024 300	BRACKET WIND-2 SECC T=1.2 F/C
40	3455 026 600	BRACKET S SECC T=1.0
44	3455 028 200	STUDS PANEX STEEL SLOT L19
46	3455 028 400	RECEPTACLES STEEL RIVET 4MM
48	3455 032 501	SHIELD INPUT SPTE T0.3
49	3455 032 601	SHIELD LEFT SPTE T0.3
50	3455 032 701	SHIELD RIGHT SPTE T0.3
51	3455 100 501	COVER FRONTEND SECC
2627	3797 037 300	LAMP MODULE ASSY

Image 10-10
Projector assembly exploded view

11. LIGHT PAD ADJUSTMENT

Overview

- Lens Holder (Scheimpflug)
- Illumination System

11.1 Lens Holder (Scheimpflug)

Adjustment controls on the Lens Holder

The following adjustment controls and locks are provided on the front of the lens holder:

- A, B and C: 3 x M10 nuts for the adjustment of the lens position.
- 1, 2 and 3: 3 x M2.5 Allen head screw close to the M10 nuts, securing the respective adjustment screw.
- 4: Additional M2.5 Allen head screw, securing the entire lens holder to avoid vibrations in the picture.

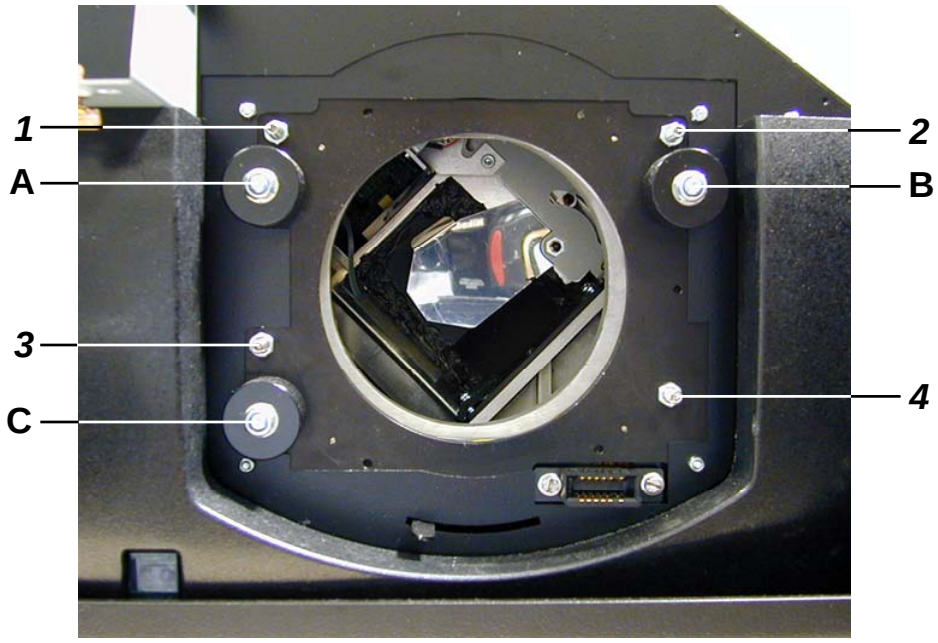


Image 11-1
Adjustment controls on lens holder (lens removed)

Necessary tools

- Nut driver of 8 mm and 10 mm
- Allen key of 2.5 mm

How to adjust the lens holder

1. Put a TLD 0.8 lens (with optical adapter) or a RLD 0.8 lens into the lens holder of the projector, the latter placed at 2 m from the screen (A lens with a fixed nominal focus position would be best, but in absence of this, you can use the TLD 0.8).
2. Ensure the projector axis is perpendicular onto the screen and the projector is leveled.
3. Looking at the screen, turn the focus barrel counterclockwise until you hit the mechanical stop.

   The lens is at near focus.
4. Loosen the lens lock screws 1 to 4 (turning counterclockwise), using an Allen key of 2.5 mm and turn the screw lock nut a few turn counterclockwise.
5. Search for the in focus picture by moving a white paper perpendicular on the projector axis (image 11-2)

   In focus picture is found before the screen or not:
   - Before the screen (1): turn the nuts A, B and C equally clockwise until the picture is in focus on the screen center (3).
   - Not before the screen (2) (meaning in focus picture is located behind the screen) : turn the nuts A, B and C equally counter-clockwise until the picture is in focus on the screen center (3).

6. Proceed to overall focus, using the adjustable nuts A, B and C. Added picture indicates the picture rotation around the vertical, horizontal or diagonal axis when turning the respective nut. (image 11-3)
   Tip: *The adjustment of the nuts A, B and C have an influence each other. Therefore, some iterations will be probably necessary.*
7. Secure the position of the lens holder by tightening screw (4) as follows:
   - Drive in the screw until you feel mechanical resistance and
   - From this position, add a half turn.
8. Repeat step 6.
9. Secure the position of the adjustable nuts by tightening the matching screw 1, 2 and 3.
10. Finally, secure the lens lock screws by tightening the matching nut.

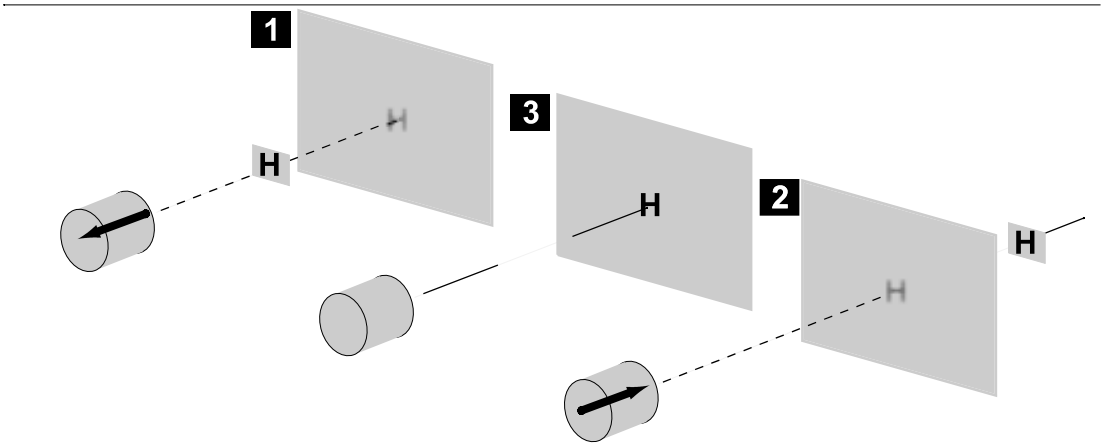


Image 11-2
In focus picture search

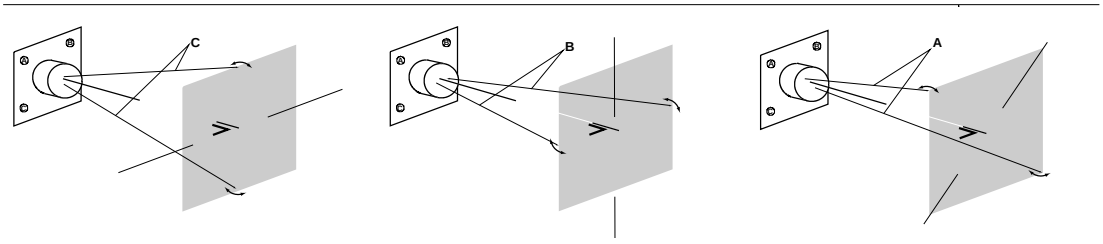


Image 11-3
Overall focus adjustment

11.2 Illumination System

Overview adjustment controls

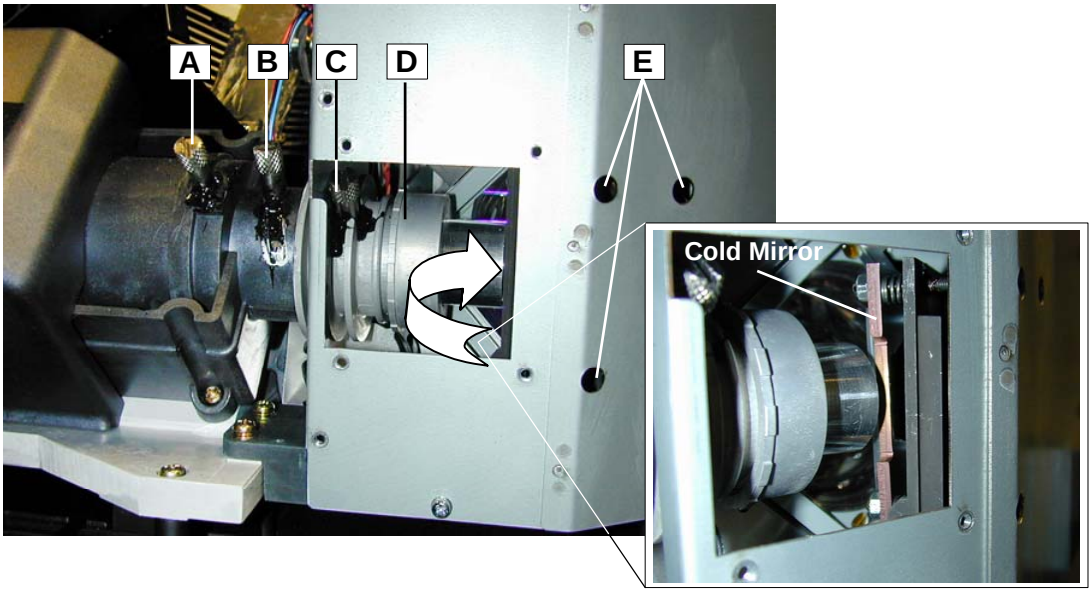


Image 11-4
Overview adjustment controls

A Rod rotation
B Light spot size adjustment
C Fixation screw light spot sharpness adjustment ring
D Light spot sharpness adjustment
E Cold mirror adjustment screws

Nominal setting of the controls

1. Ensure the projector is turned off.
2. Loosen the screw A and B. (image 11-5)
3. Rotate the screw A and B in the middle of its adjustment range.
4. Loosen screw C.
5. Rotate the ring (D), causing the rod to move horizontally, until the screw (C) is in the middle of the horizontal adjustment range.
6. Place the cold mirror in its nominal position, mirror support parallel to heat sink with 5.5 mm spacing, by adjusting the 3 screws (E), accessible through the holes in the lamp house, with an Allen key of 1.5 mm. (image 11-6)

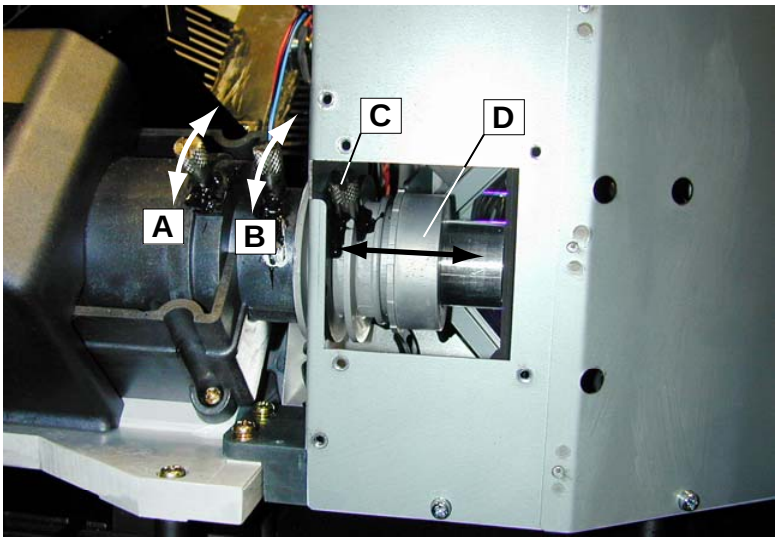


Image 11-5
Nominal setting of the controls

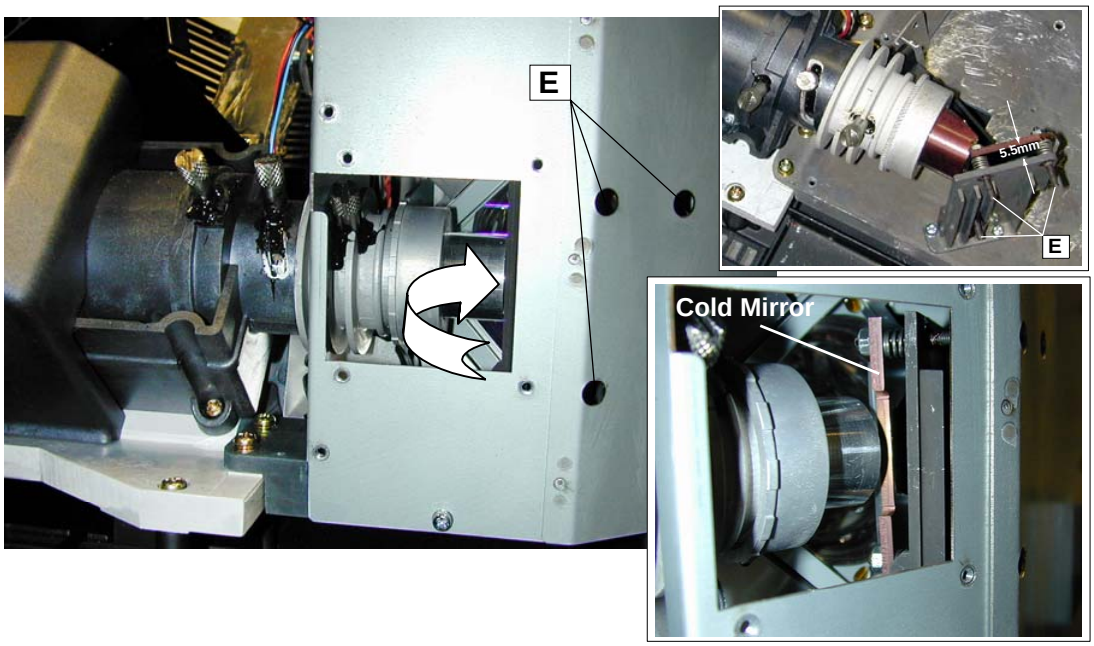


Image 11-6
Nominal setting of the cold mirror

Alignment of the Illumination path

1. Turn on the projector and displays a white test pattern (See manual).
2. Adjust the folding mirror until the DMD is illuminated by the light spot symmetrically. (image 11-7)
3. Rotate the rod until dark borders are visible in the corners of the image. (image 11-8)
4. Adjust the horizontal position of the rod, by turning the ring (D), for sharp outline at the dark borders.
5. Rotate the rod back to its nominal position.
6. Adjust the light spot size lens (B) until the light spot on the DMD is slightly larger than the DMD size. (image 11-9)
7. Repeat the adjustment of the border sharpness, step 3 to 5 in this procedure.
8. Finally, secure the position of the controls by tightening and fixing with appropriate glue the respective screws (A), (B) and (C).

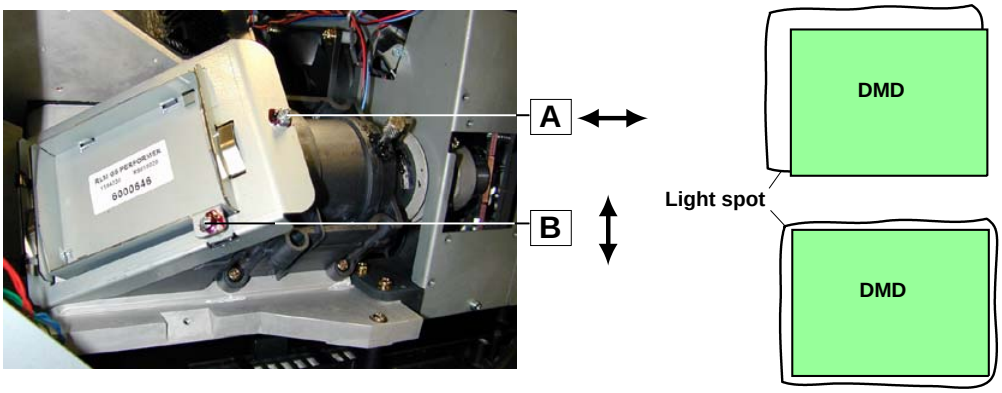


Image 11-7
Folding mirror adjustment

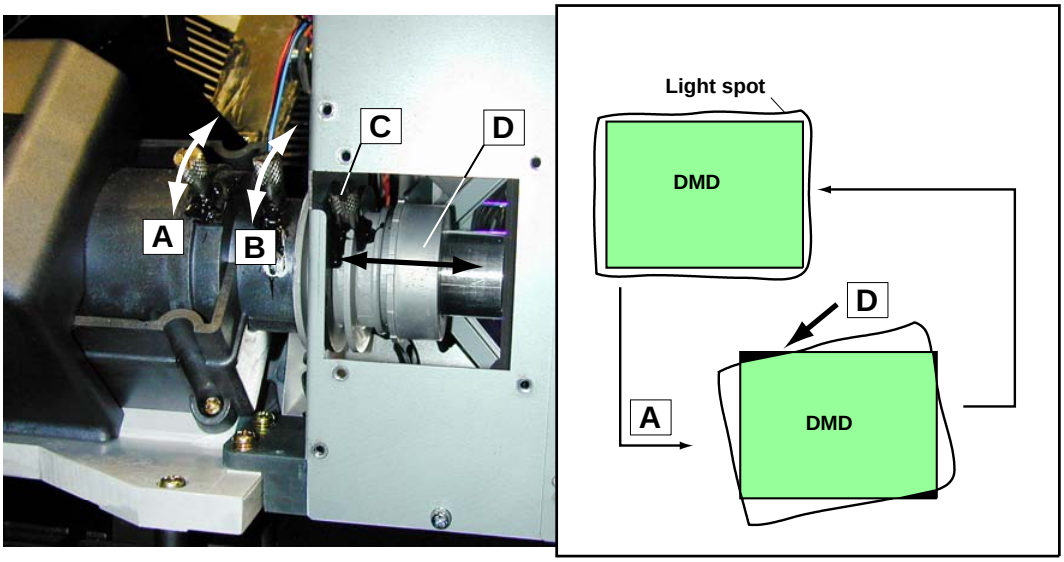


Image 11-8
Light spot sharpness adjustment

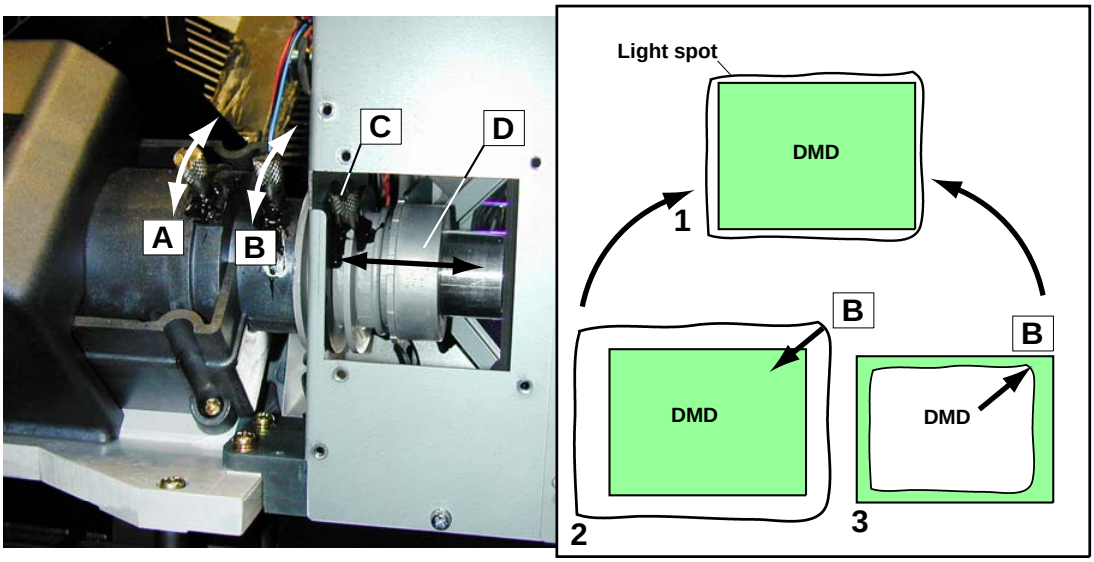


Image 11-9
Light spot size adjustment

Alignment of the Cold mirror

1. Place a light meter at the center of the screen.
2. Adjust the 2 tilt screws (E1) and (E2), using an Allen key of 1.5 mm, for maximum light reading on the light meter. (image 11-10)
3. Search for different Z-positions of the cold mirror, turning the z-screw (E3) forwards and backwards, the maximum light reading on the light meter.
   Note: *For each Z-position of the cold mirror, readjust the tilt screws for maximum light reading on the light meter.*
4. When the cold mirror position with the global maximum in light output is found, fix the adjustment screws with appropriate glue.

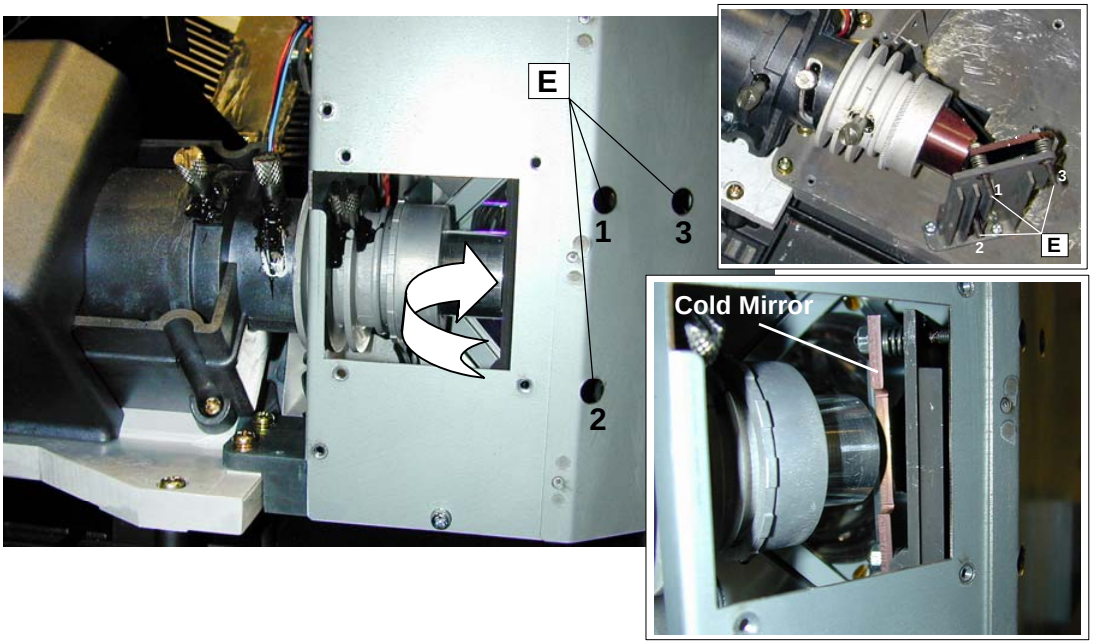


Image 11-10
Cold mirror position alignment

12. PROJECTOR SUSPENSION/STACKING

12.1 Stacking Projectors

How to stack projectors

Up to 2 projectors can be stacked on each other without using extra tools or accessories.

1. Put the second projector on the first one, matching the rigging points of the second projector with the rigging sockets of the first projector. (image 12-1)
2. Secure the ringing points in the rigging socket as follows:
   - Press and keep the lock ring (1) in the rigging socket downwards.
   - Rotate the rigging foot a little counterclockwise until the lock pins (3) match the notches in the rigging socket.
   - Rotate the rigging foot in a way the lock pins move below the pin blocker (4) fully.
   - Loosen the lock ring (1). (image 12-2)

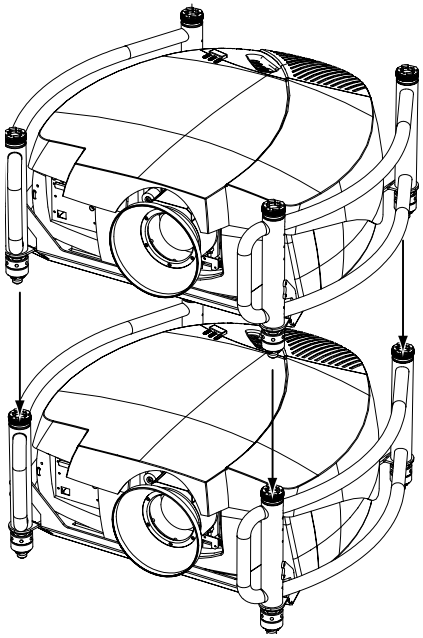


Image 12-1
Stacking projectors

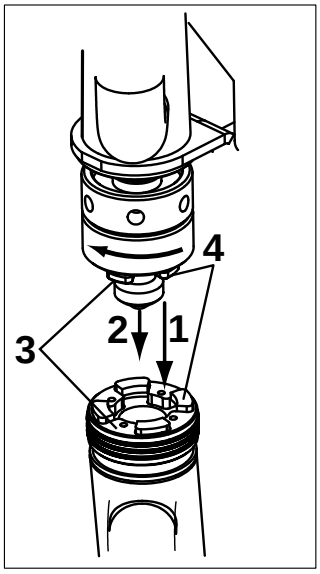


Image 12-2
Securing the rigging assembly

Ceiling mounted stacked projectors

For ceiling mounted configurations, mount a security cable between the lowest projector and the upper projector.

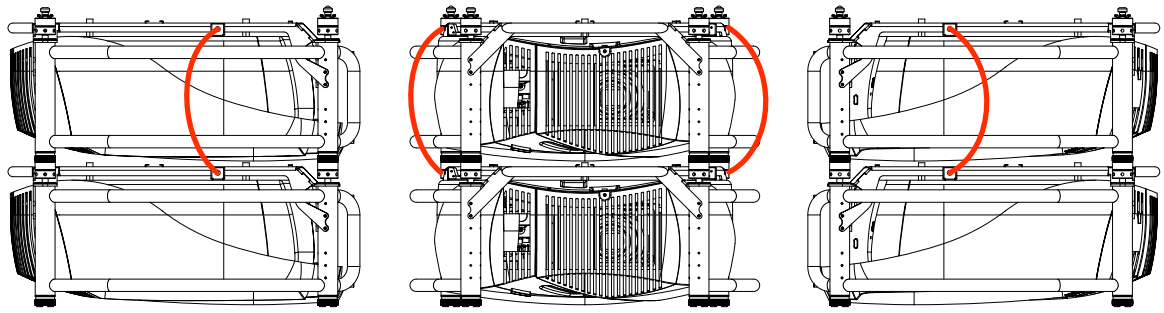


Image 12-3
Mounting the security chain

CAUTION: Be sure the safety working loud of the used security cables and appropriate connectors are sufficient to support one projector. Refer to the supplier of the security cable for safety details

12.2 Projector Suspension

What is provided?

Slots (A) are provided on the four sides of the stacking frame (bottom side) which allow the mounting of four doughty clamps in combination with a hinge joint.

Consult a professional structural engineer prior to suspending the ceiling mount from a structure not intended for that use. Always ensure the working load limit of the structure supporting the projector.

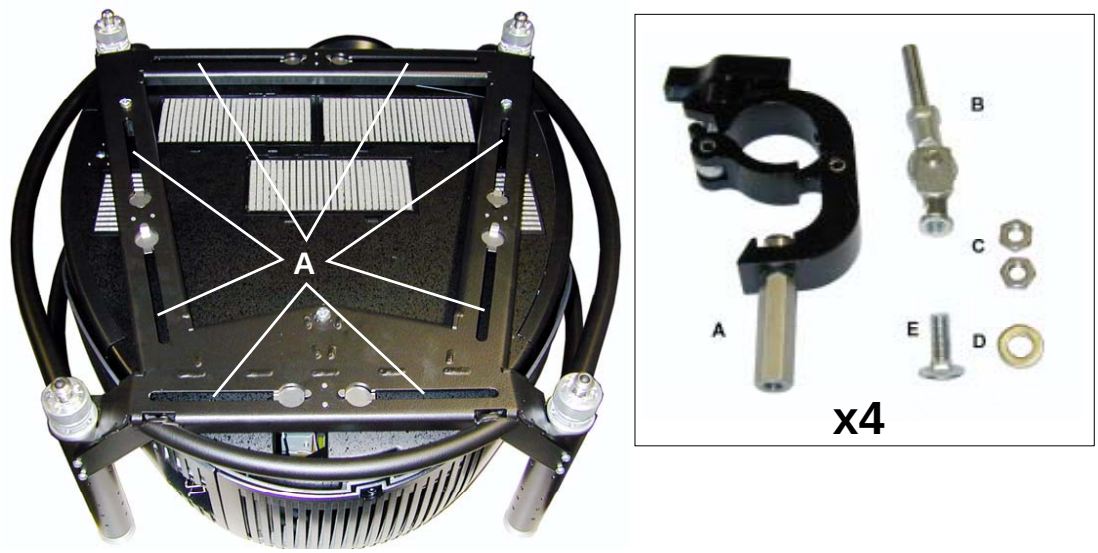


Image 12-4
Rigging assembly

Necessary tools

Wrench of 17mm

How to mount the doughty clamps

1. Refer to the installed trussing to determine the place of the clamps in the slots on the rear of the stacking frame.
2. Push with the head of the cup square neck bolt the leaf spring downwards (1) to slide the bolt head in the slot (2). (image 12-5)
3. Secure the position of the bolt with a washer (3) and nut (4).
4. Turn a second nut on the bolt (later used to fix the hinge joint).
5. Turn the hinge joint (5) on the bolt to the end in a way the hinge joint faces the lens (Forward- or backwards projector pivoting).
6. Secure the position of the hinge joint by tightening the second nut (4).
7. Turn the doughty clamp on the hinge joint fully (6).

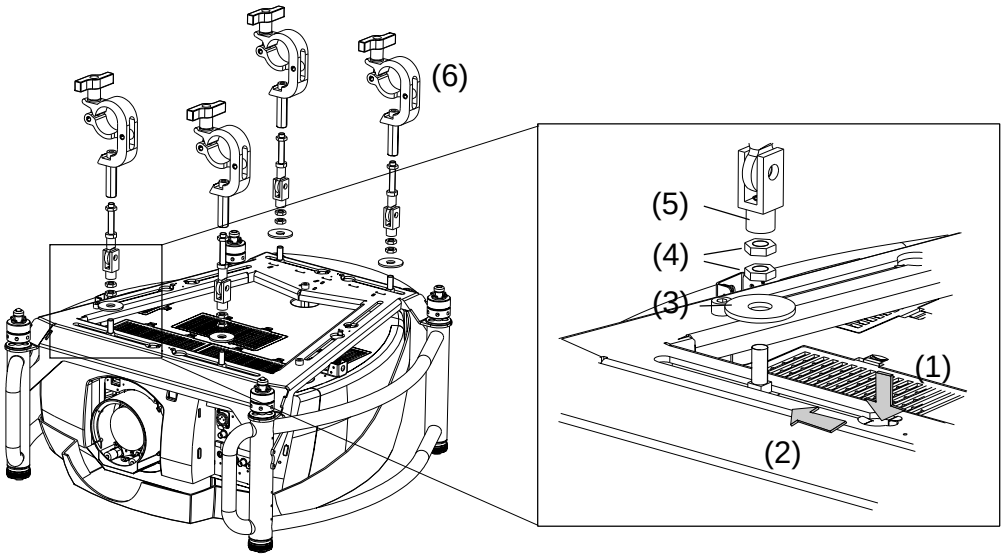


Image 12-5
Mounting the doughty clamps

How to hook the clamp onto the truss beam

1. Open the clamp by loosening the clamp lock. (image 12-6)
2. Hook the clamp onto the truss beam.

   The built-in clamp trigger automatically shuts the clamp around the truss beam.
3. Secure the position of the clamp by tightening the clamp lock.

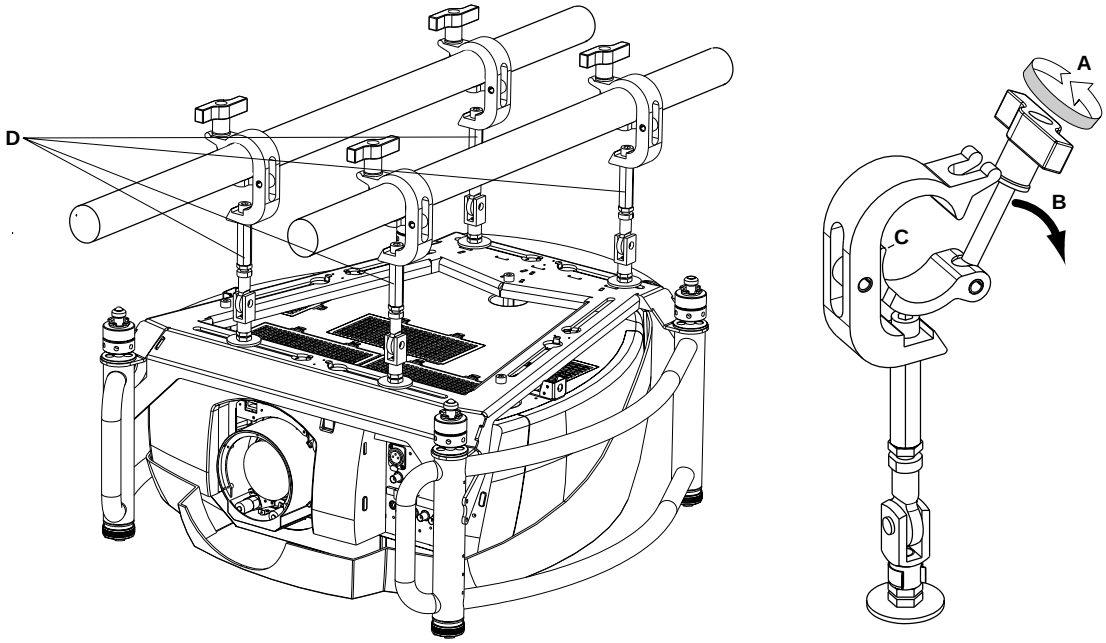


Image 12-6
Projector mounting onto a truss

When the projector is mounted onto the truss, the adjustable spacers (A) in the clamp assembly allow to adapt small level differences in the clamp height, using a wrench of 17 mm.

13. MAINTENANCE OF THE PROJECTOR

13.1 Air Filters

About maintaining the air filters

It is recommended that you replace the air filters (located at the bottom of the projector) when you replace the lamp - or sooner, in dusty or dirty environment. In the latter case, **check monthly** if replacement is required.

A clogged filter reduces the air flow, and can lead to overheating and failure of the projector.

Location of the air filters

The air filters, in total 5 filters, are located into the bottom of the projector.

The 2 exterior filters (4 & 5) are obstructed by the mounted stacking frame. To be able to remove these filters, loosen a few turn the frame screw (A) nearest the rear side of the projector.

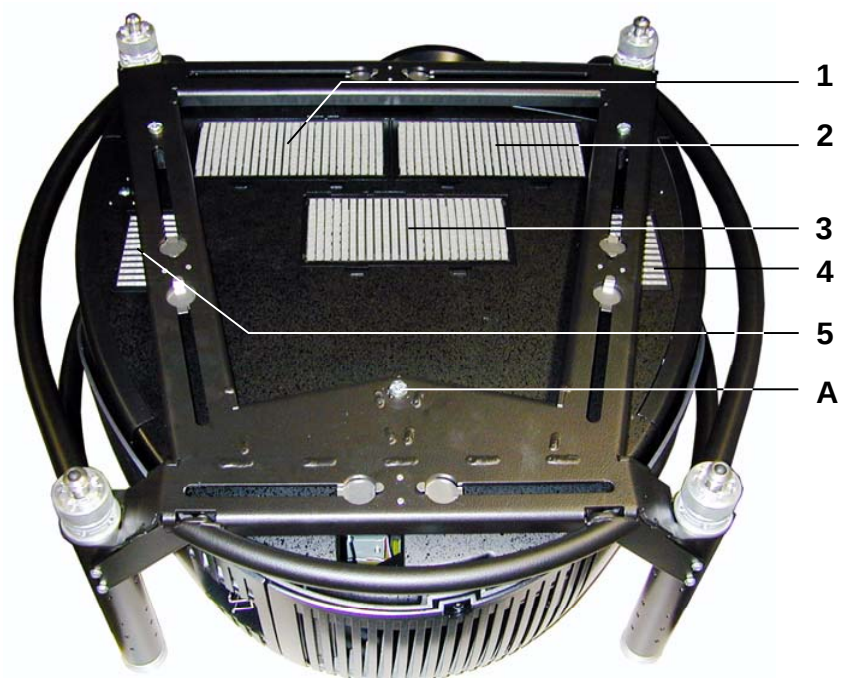


Image 13-1
Location of air filters

Replacement of the air filters

1. Press the lip (A) of the filter lock (2 for filters 1 to 3 and 1 for filter 4 & 5) to release and next,
2. Lift up front (B) of air filter and move forwards (C) to remove. (image 13-2, image 13-3)
   Tip: *For the filters 4 & 5, when the lock is released, move the filter a little to the inside of the projector until the filter center clips are free, and next remove the filter to the outside.*

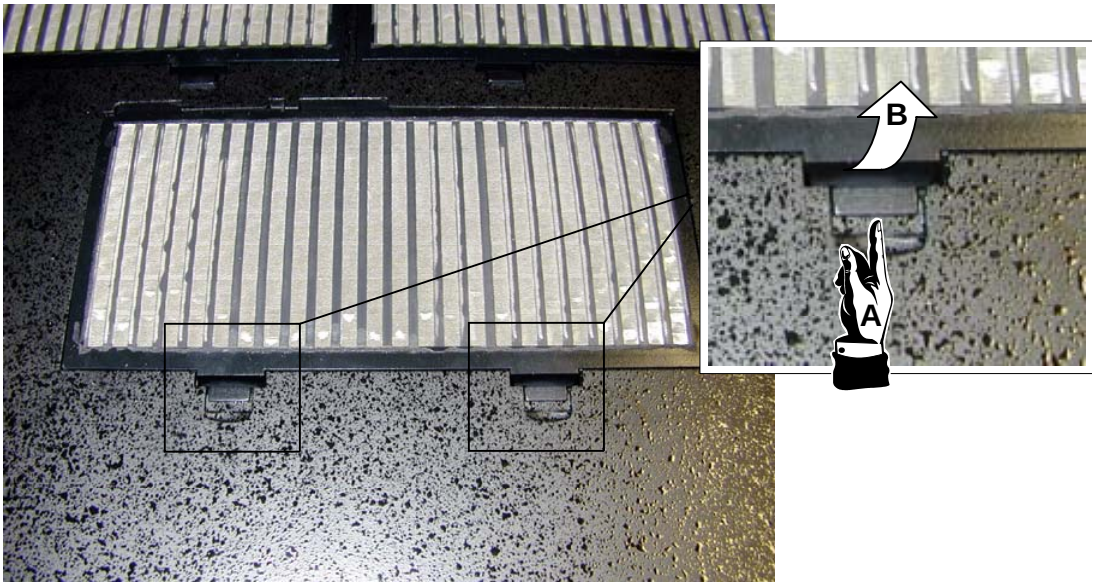


Image 13-2

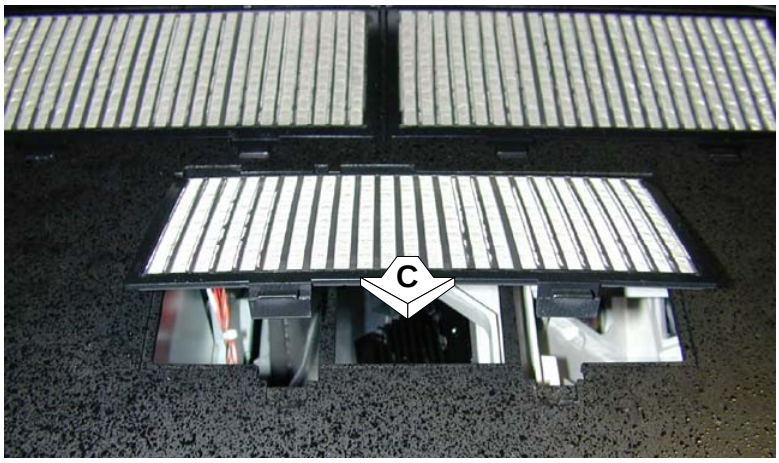


Image 13-3

Available kit

All the 5 air filters are assembled to 1 kit, order number **R401045K**

13.2 Cleaning the lens

To minimize the possibility of damaging the optical coating or scratching exposed lens surface, we have developed recommendations for cleaning the lens. FIRST, we recommend you try to remove any material from the lens by blowing it off with clean, dry deionized air. DO NOT use any liquid to clean the lenses.

Necessary tools

Toraysee™ cloth (delivered together with the lens kit). Order number : R379058.

How to clean the lens ?

Proceed as follow :

1. Always wipe lenses with a CLEAN Toraysee™ cloth.
2. Always wipe lenses in a single direction.
   Warning: *Do not wipe back and forwards across the lens surface as this tends to grind dirt into the coating.*
3. Do not leave cleaning cloth in either an open room or lab coat pocket, as doing so can contaminate the cloth.
4. If smears occur when cleaning lenses, replace the cloth. Smears are the first indication of a dirty cloth.

WARNING: Do not use fabric softener when washing the cleaning cloth or softener sheets when drying the cloth.

Do not use liquid cleaners on the cloth as doing so will contaminate the cloth.

CAUTION: Other lenses can also be cleaned safely with this Toraysee™ cloth.

14. SOFTWARE UPDATE

Overview

- Installation requirements
- Interconnection PC/Projector
- Projector Software Update Procedure

14.1 Installation requirements

Computer hardware

- Standard PC with one free serial port (COM1 or COM2)
- RS232 straight communication cable.

Computer Software

- Windows 2000, Windows NT, Win 95, Win 98 , Win ME or Win XP.
- Barco LCD/DLP Projector Code Control (Download program)

14.2 Interconnection PC/Projector

Connection PC to Projector

1. Connect one side of the RS232 communication cable to the free COM port of your PC. (image 14-1)
2. Connect the other side of the RS232 communication cable to the RS232 IN of you projector.

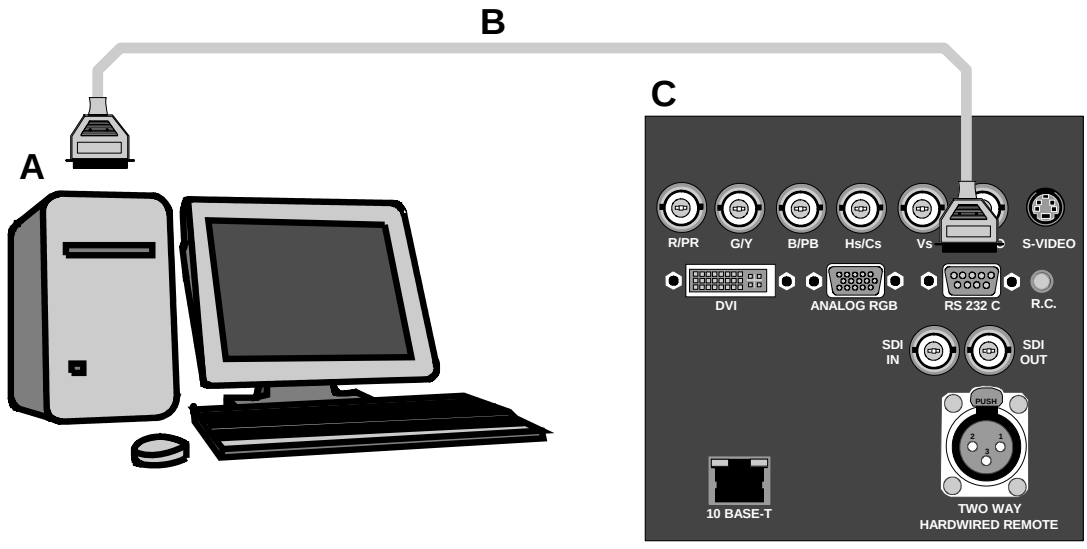


Image 14-1
Software update via RS232

A PC + Barco download program
B RS232 straight cable
C RS232 input projector

14.3 Projector Software Update Procedure

How to download the projector software?

1. Go to the Barco Partnerzone (htpp:/www.partnerzone.events.barco.com) and login. (image 14-2)
   Note: *If you don't have a login, start the registration procedure to get a log in (Username + password).*
2. Once entered the partnerzone, select the desired market "partnerzone events". (image 14-3)

   The Home page of the market partnerzone events is displayed, showing the software updates list.
3. Select "more software updates". (image 14-4)

   A tap page is displayed showing the 4 different product ranges.
4. Select tap "Projector". (image 14-5)

   A page with all the PROJECTOR products is displayed showing the software which can be downloaded.
5. In the software summary of the RLM G5, select item "RLM G5". (image 14-6)

   A pop up window is displayed asking to save the software for update to your disk.
6. Confirm "Save to disk" (image 14-7, image 14-8)

   A dialog window opens asking where to save the software file. Using the browse button, browse to the desired directory on your PC and press "Save".

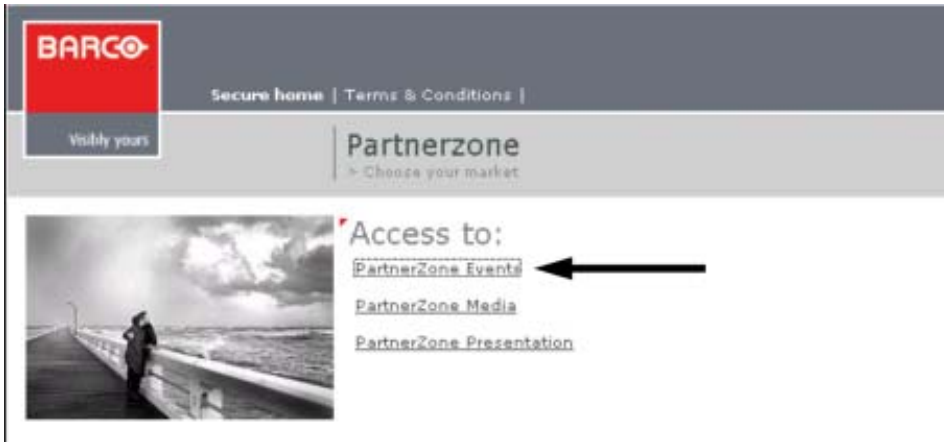


Image 14-2
PartnerZone Access to

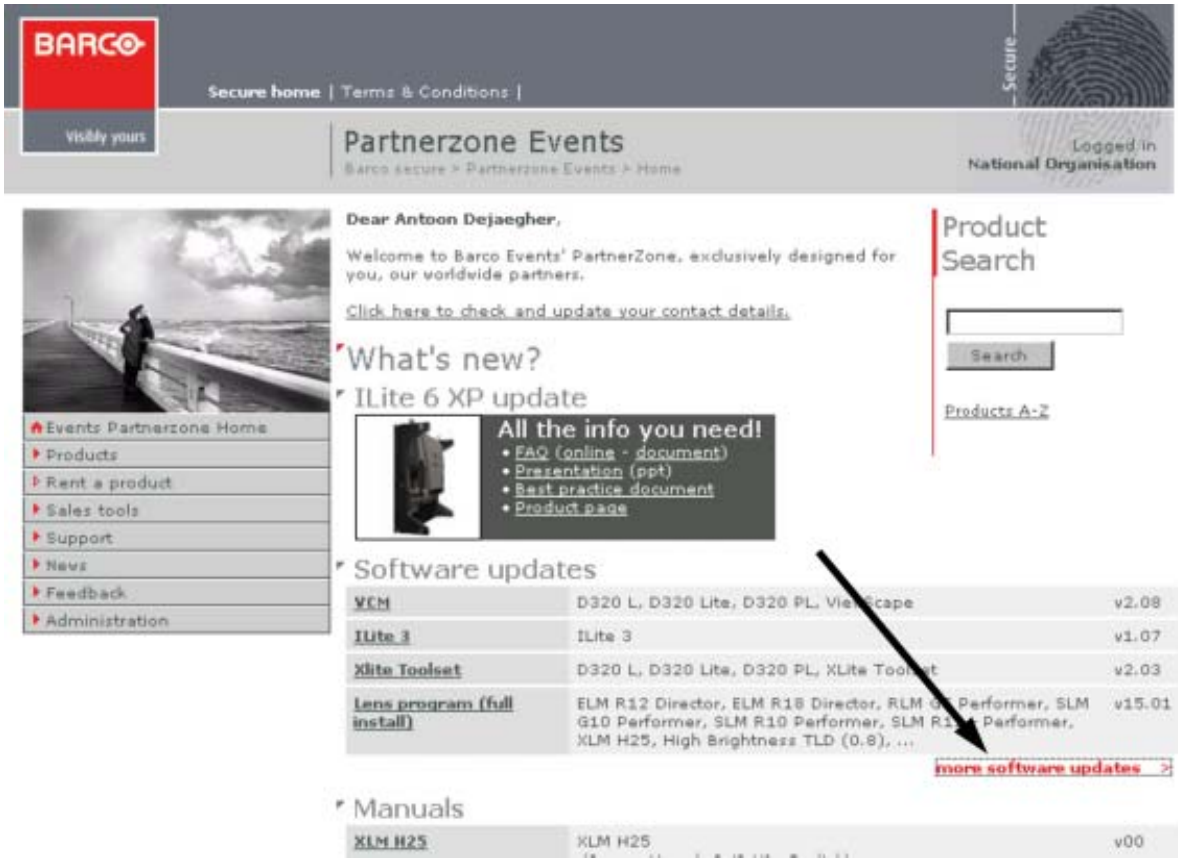


Image 14-3
PartnerZone Software updates

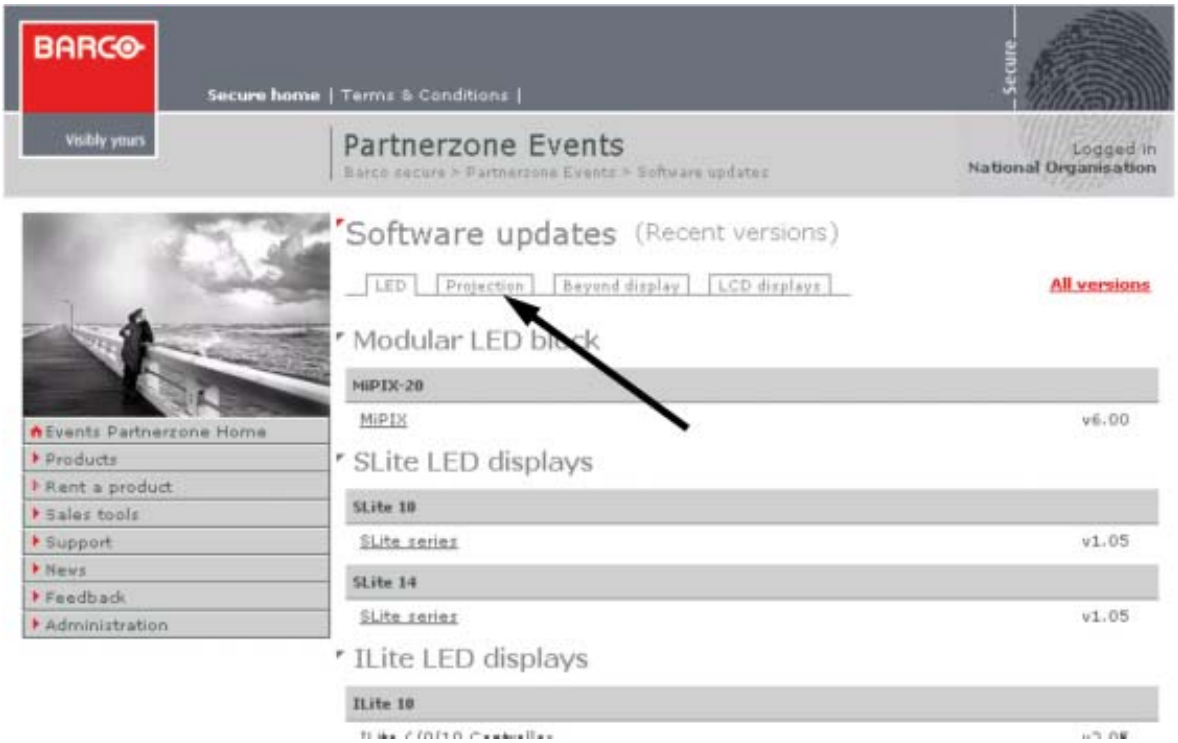


Image 14-4
PartnerZone Product selection

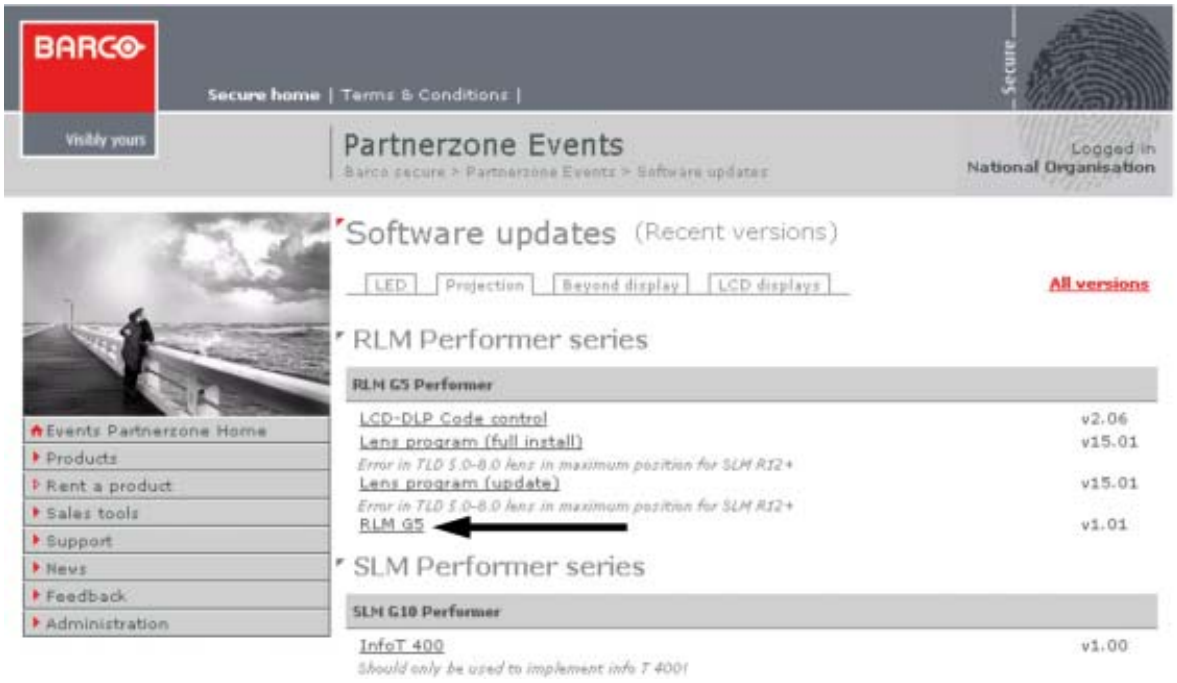


Image 14-5
PartnerZone Product Software download

File Download
You have chosen to download a file from this location.
R32898801_V1_1_flash.zip from secure.barco.com
What would you like to do with this file?
Open this file from its current location
Save this file to disk
Always ask before opening this type of file
OK
Cancel
More Info

Image 14-6
File download

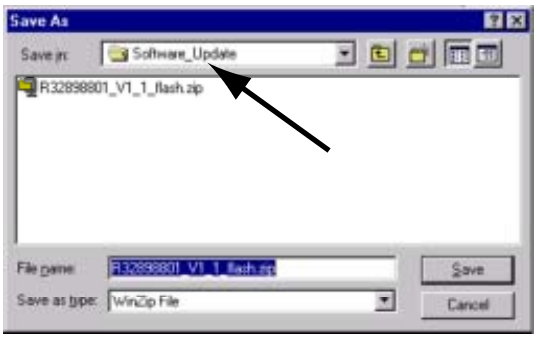


Image 14-7
Software source save

Image 14-8
Software source downloading

How to UnZip the downloaded Zip file

The downloaded file is a compressed merged file. Extracting the merged files can be performed using the software program WinZip.

1. Click the downloaded file R32..... and press the right button on the mouse. (image 14-9)

   The select window displays a various of possibilities to extract the zip file.

2. Click “Extract to folder D\.....”

   The Zip file will be extracted, as a sub directory, in the directory where the downloaded Zip file has been saved.

3. Click the sub directory to display the extracted files.

   The following files become available:
   - RlmG5.101.txt: file contains version information and installation procedure.
   - RlmG5-Performer.101.bin: source file
   - CodeControl.exe: download program

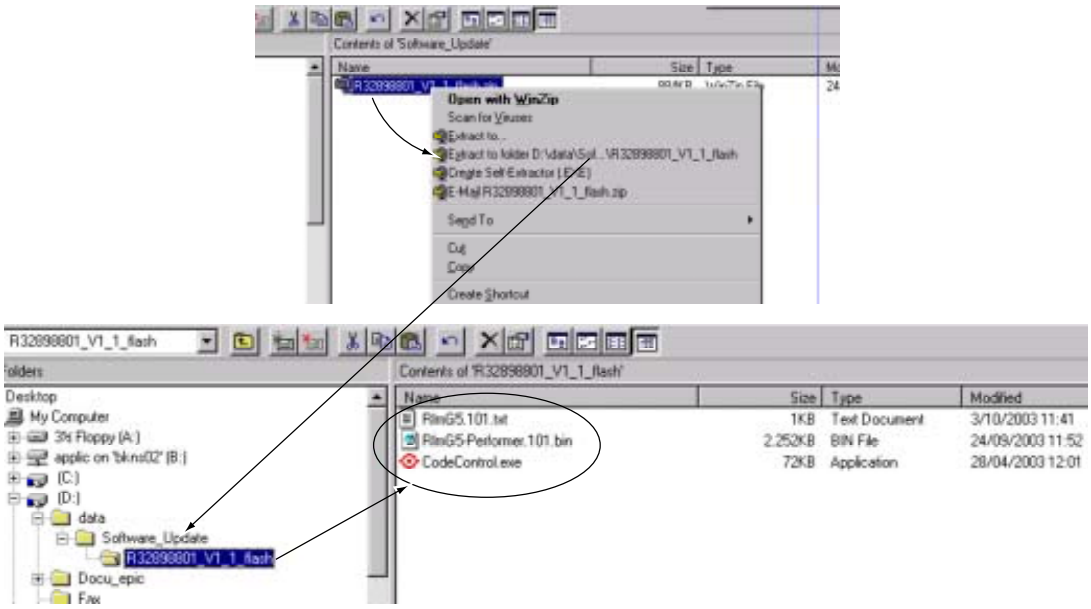


Image 14-9
UnZip the downloaded file

How to update the projector software?

1. Switch the projector into StandBy mode.
2. Double click “CodeControl.exe” to start the download program. (image 14-10)

   A dialog window opens asking to fill out the following parameters:
   - Projector address (2)
   - Communication parameters, port (3) and Baudrate (1)
   - Source file (4)
3. Set the projector address. (For a switched on projector, the projector address can be displayed on the screen by pressing the address setting button on the remote control or on the identification screen via scrolling in the menu bar “General-Identification”.)
4. Set the PC communication port number on which the RS232 cable is connected to.
5. Set the Baudrate of the PC equal to the Baudrate of the projector as follows:
   - Click “Detect”. The PC tries to communicate with the projector on differents Baudrates until the projector returns an acknowledgement. The detected Baudrate is filled out in the Baudrate drop down box.
   - Set, if a value lower than 9600 b/s is filled out, the Baudrate in the drop down menu to minimum 9600 b/s or recommended 115200 b/s. Simultaneously the Baudrate of the projector is set at the same value. (image 14-11)

   Tip: *The minimum Baudrate to be used is 9600 b/s*

   The recommended Baudrate is 115200 b/s
6. Click the **Browse** button and browse to the previously downloaded source file (xxx.bin). (image 14-12)
7. Click the **Download** button to start the download process.
   - A successful download is indicated with a green spot in the right bottom corner of the download interface.
   - A failed download is indicated with a red spot in the right bottom corner of the download interface. (image 14-13)

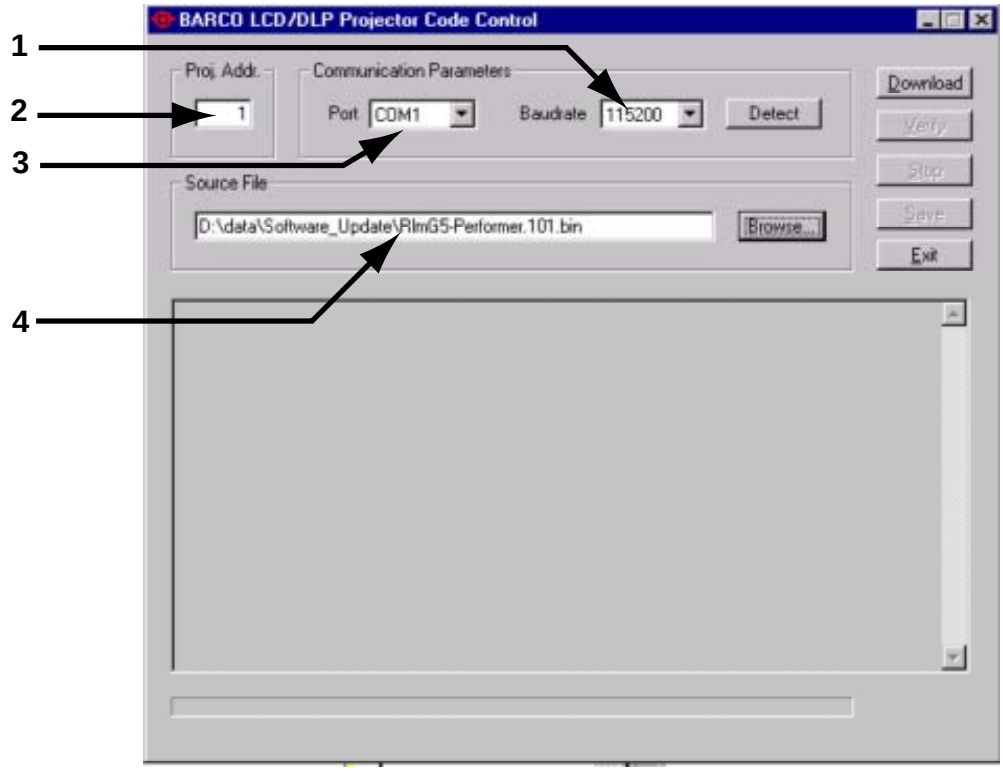


Image 14-10
Fill out the download parameters

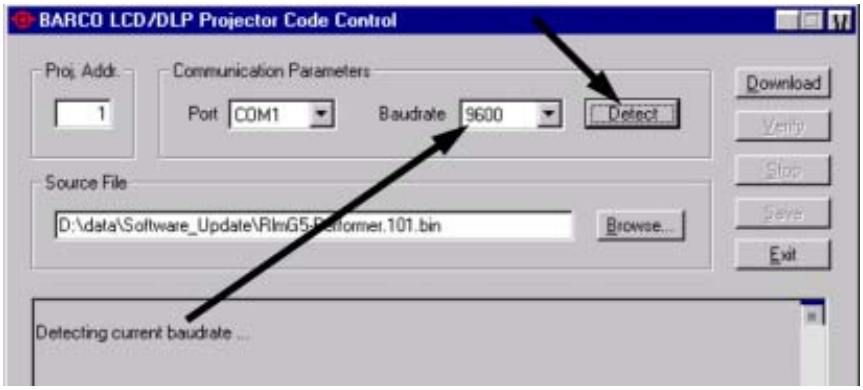


Image 14-11
Baudrate set up

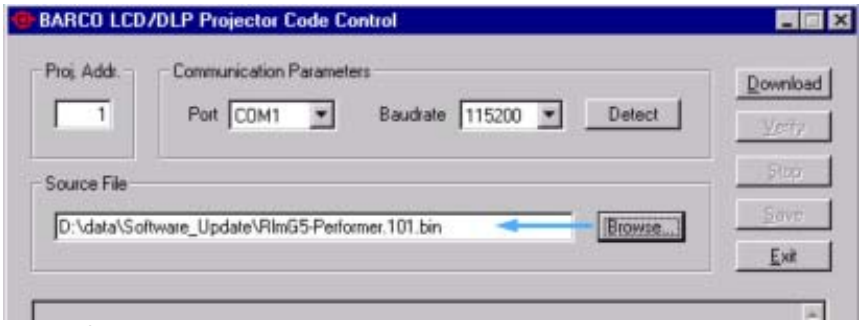


Image 14-12
Filling out the name of the source file

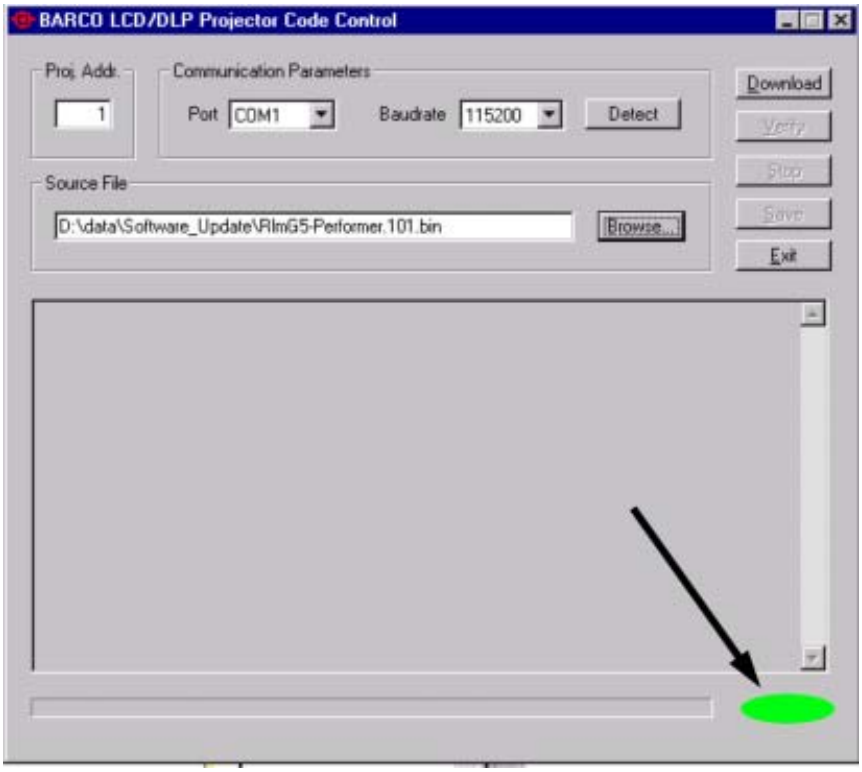


Image 14-13
Download confirmation

It is recommended to close all running programs before starting the download.

15. TROUBLESHOOTER RLM R5 PERFORMER

15.1 Start-up without audible relay click

Troubleshooter

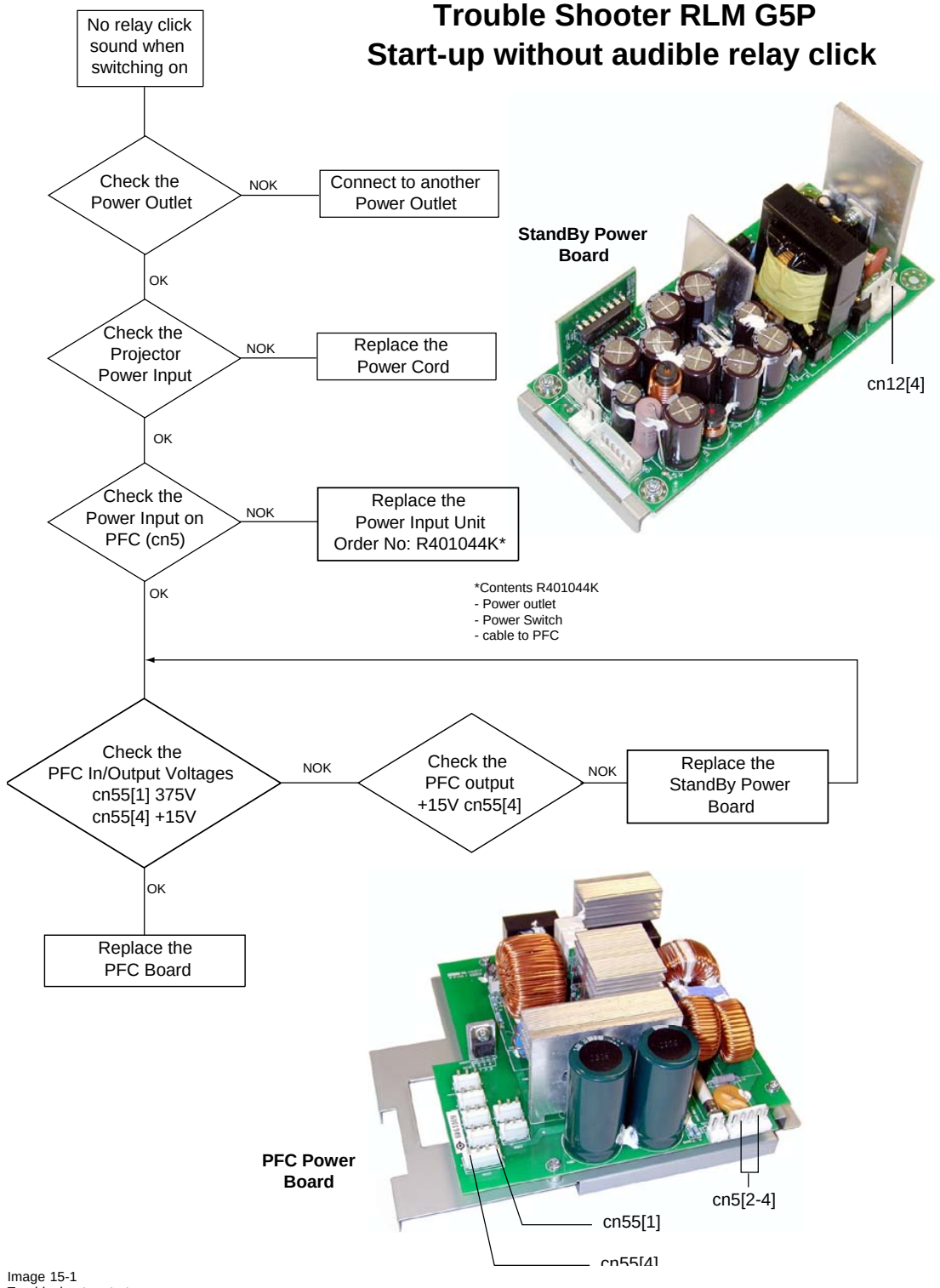


Image 15-1
Troubleshooter start-up

15.2 Led 1, 2 and 3 light up Red continuously

Troubleshooter

Trouble Shooter RLM G5P
Led1-Led2 and Led3 light up Red (continuously)

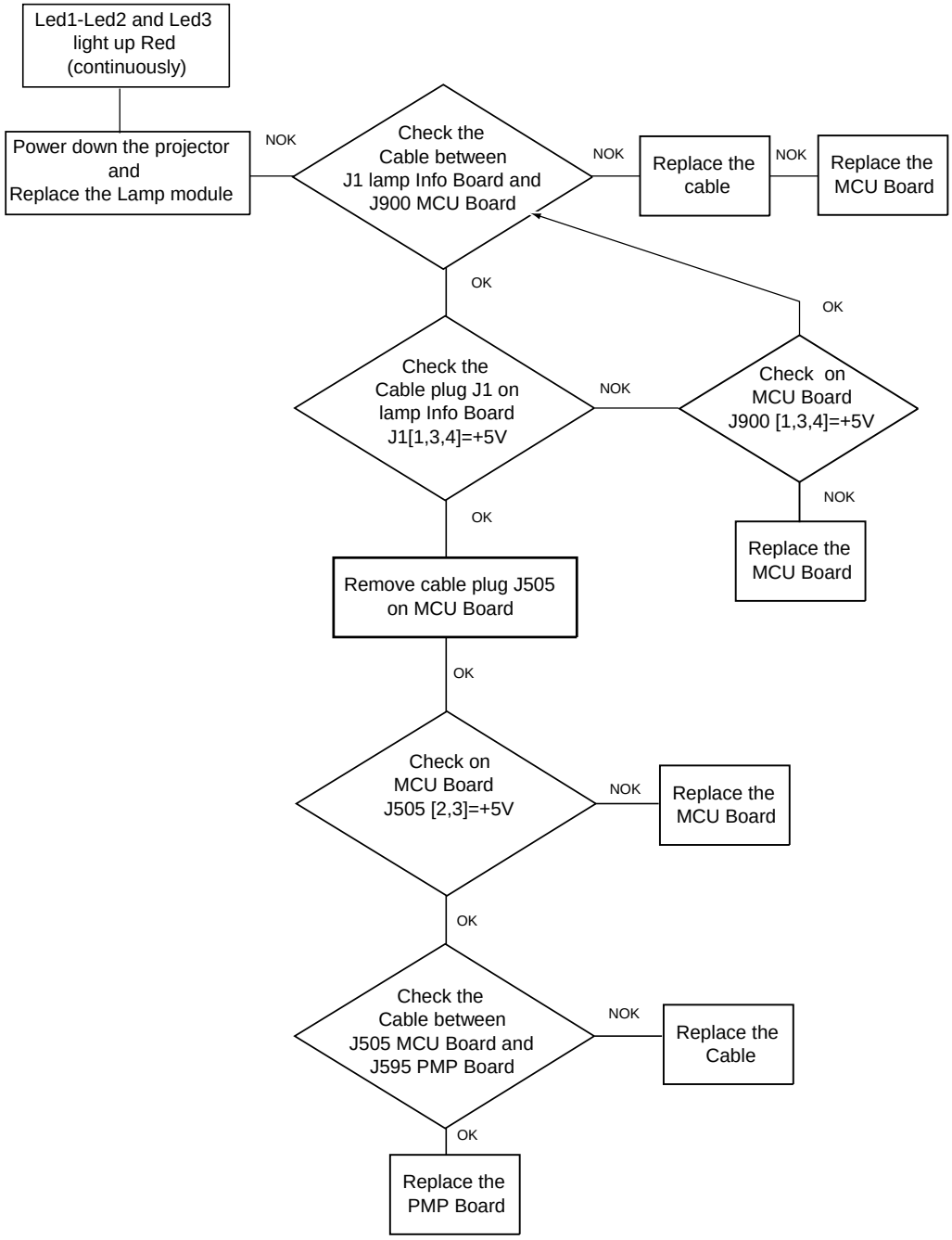


Image 15-2
Troubleshooter Standby mode

Indication of parts mentioned in troubleshooter

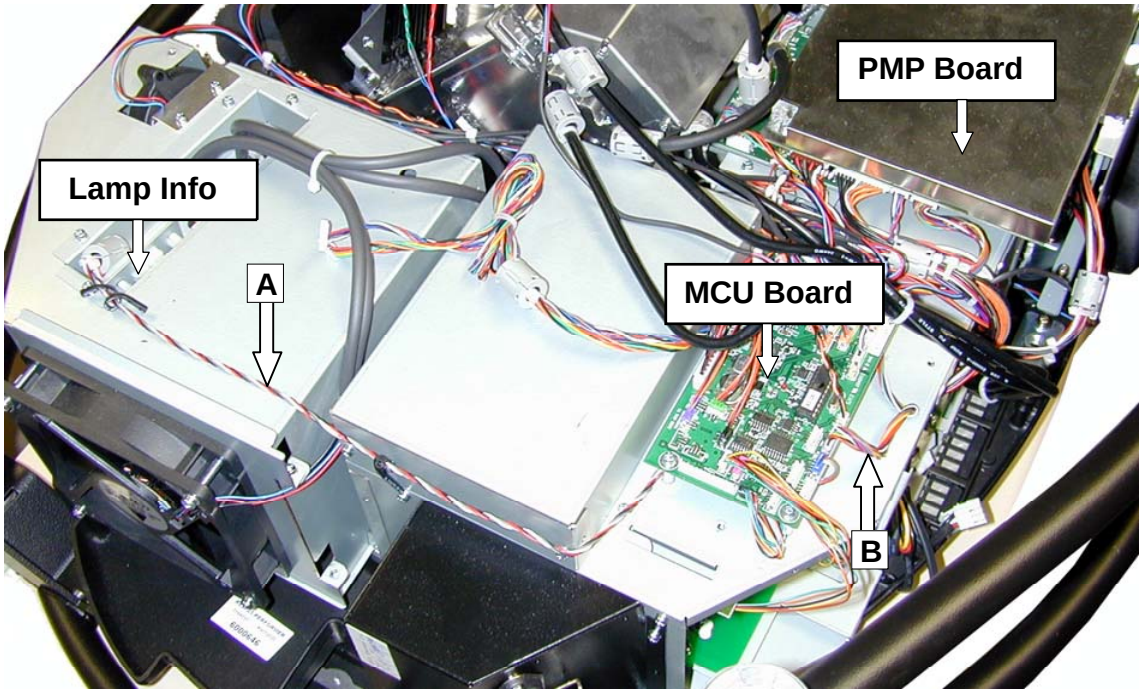
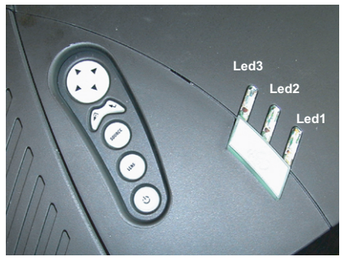


Image 15-3
Parts mentioned in troubleshooter

Trouble Shooter RLM G5P
Led1 and Led2 light up Red
Led 3 lights up Green and flashes 60s



Led1and Led2 light up Red
Led 3 lights up Green and flashes 60s

Lamp Lit
and then Off
NOK
Replace the
Lamp module
NOK
Check the cable between
Ballast and MCU Board
NOK
Replace the
Cable

OK

Check on MCU Board
J203[3]=+5V
J213[3]=+5V
NOK
Replace the
MCU Board

OK

Check on MCU Board
J203[4] and J213[4]
Hi(+5V) to Low transition
when turning on
NOK
Replace the
MCU Board
NOK
Check cable between
J506 MCU Board and
J304 Adapter Board
NOK
Replace the
Cable

OK

Replace the
Lamp Power Supply
NOK
Replace the
PMP Board
NOK
Replace the
Adapter Board

OK

Turn on again the projector

Check on MCU Board
Led D3

The Led 3 lights: 2 sec
OK
Failure:
Powergood error
On the MCU Board
Pull out the cable plug on
J24/J25/J26
On the free cable plugs,
measure the voltage level
at pin 1 of the plug:
+5V?
NO
Replace the respective Power Board
on which cable plug no +5V
has been measured
YES
Replace the MCU Board

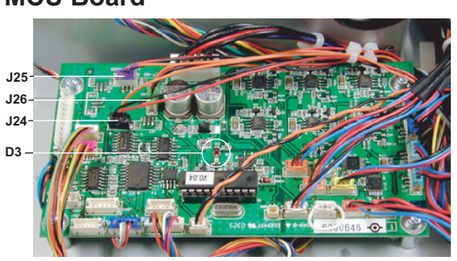
The Led 3 lights: 4 sec
OK
Failure:
Fan error
Check the Fans on
rotation
by naked eye
OK
For the Fans not controllable
by naked eye
In the cool down period
of 60 sec measure voltage
at pin 1 of the Fan plug
NOK
NOK

The Led 3 lights always
OK
Replace the Temperature
Sensor in the lamp module

On the MCU Board
Insert the Fan plug of
the non rotating Fan in an
other Fan connector
OK
Replace the MCU Board
NOK
Replace the Fan

The Led 3 do not light
OK
Replace the MCU Board

MCU Board



Troubleshooter RLM G5P
Led1, Led2, Led 3 do not light up

Led1,Led2,Led 3
do not light up

Be sure you have heard the click sound of the relay when power switch has been pressed

Press the 'Power On' key on the
- Remote control or
- Key panel

OK → Replace the Led/IR Board

NOK

Disconnect
IR cable plug J306
on the adapter board

Restart

OK → Replace the Front IR Board

NOK

Check Power Supply
LED/IR Board

J307[1]=+5V?

OK → Replace the Front IR Board

NOK

Check +5V from
MCU Board to LED/IR Board

J506[1]=+5V?

OK → Check cable between LED/IR Board and Adapter Board

OK → Replace the LED/IR Board

NOK → Replace the Cable

NOK

Check +5V on
input MCU Board

J1[5]=+5V?

OK → Replace the MCU Board

NOK

MCU Board
Disconnect plug J1 of
the power input cable

Pin 1 plug
J1=+5V?

OK → Replace the MCU Board

NOK

Power down the
projector

Remove the following plugs
on the PFC Board
J58/59/60/61

Turn on the projector

NOK → *Only the Standby Board stays connected with the PCF Board*

J58: connector to OEM Board
J59: connector to Format Board
J60: connector to LPS 1
J61: connector to LPS 2

OK

Power down the
projector

Plug in J60 on LPS 1

Turn on the projector

First, check the interconnection cable

NOK → Replace the LPS 1

OK

Power down the
projector

Plug in J61 on LPS 1

Turn on the projector

First, check the interconnection cable

NOK → Replace the LPS 2

OK

Power down the
projector

Plug in J58 on Formatter Board

Turn on the projector

First, check the interconnection cable

NOK → Replace the Formatter Board

OK

Power down the
projector

Plug in J59 on OEM Board

Turn on the projector

NOK

Power down the
projector

Remove the following plugs on the
OEM Board: J32 and J34

Turn on the projector

First, check the interconnection cable

NOK → Replace the OEM Board

J32: connector to PMP Board
J34: connector to Input Backplane

OK

Power down the
projector

Plug in J32 on PMP Board

Turn on the projector

OK

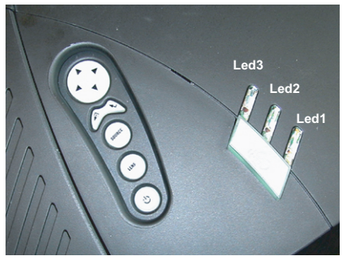
Power down the
projector

Plug in J34 on Input Backplane

Turn on the projector

NOK → Replace the PMP Board

NOK → Replace the Input Backplane



Disconnect the
Standby power supplies to the
other boards by removing:

J1 on MCU Board
J27 on Format Board
J33 On OEM Board
J519 on PMP Board
J419 Input Backplane

NOK → *First, check the interconnection cable* → Replace the StandBy Board

NOK → Replace the PFC Board

OK

Power down the
projector

Plug in J419 on Input Backplane

Turn on the projector

First, check the interconnection cable

NOK → Replace the Input Backplane

OK

Power down the
projector

Plug in J519 on PMP Board

Turn on the projector

First, check the interconnection cable

NOK → Replace the PMP Board

OK

Power down the
projector

Plug in J1 on MCU Board

Turn on the projector

First, check the interconnection cable

NOK → Replace the MCU Board

Power down the
projector

Plug in J27 on Formatter Board

Turn on the projector

First, check the interconnection cable

NOK → Replace the Formatter Board

Power down the
projector

Plug in J33 on OEM Board

Turn on the projector

First, check the interconnection cable

NOK → Replace the OEM Board

A. TECHNICAL SPECIFICATIONS

A.1 RLM R5 Performer

Summary

Light Output	4500 ANSI Lumen
Resolution	1024 x 768 (native) 1600 x 1200 (max)
Contrast Ratio	900 : 1 (full field)
Brightness uniformity	90 %
Lamp	Lifetime (max): 1500 Hrs Lifetime (typ): 1000 Hrs Lamp Power: 2 x 250 W
Noise level (dba) 20°C (68°F)	< 43
Noise level (dba) 40°C (104°F)	< 50
Ambient temperature	Max 40°C (104°F)
Mains Voltage	92-240 V
Power consumption	1000 W
Weight	Projector: 25 kg (56 lbs) Frame: 5 kg (11 lbs)
Seamless Switching	Standard: box-in/out, etc ...
ScenergiX	Standard horizontal and vertical electronic edge blending
Network connection	Optional
Sealed DLP™ core	Standard
Inputs	• **1x Configurable 5-Wire (BNC)** (Composite, S-Video, Component Video, RGHHV, RGBS, RGsB) • **1x Composite Video (BNC)** (Up to 7 Composite Videos, using all connectors on top input board) • **1x S-Video (4-pin mini-DIN)** (Up to 3 S-Videos when combining BNCs) • **1x Analog RGB** (D15 Connector) • **1x SDI** (with active loop-through) • **1x DVI (Digital Visual Interface)** • **1x RS232** • **1x XLR** (For 2-way communication using rugged-remote)
Order Information	R9010020
Picture-in-picture	Up to 4 sources simultaneously (2 data, 1 video and 1 SDI)
Digital zoom	Standard
Light shutter	Standard
Built-in radio remote receiver	Optional

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Revision Sheet

To:

Barco nv Events/Documentation
Noordlaan 5, B-8520 Kuurne
Phone: +32 56.36.89.70, Fax: +32 56.36.88.24
E-mail: antoon.dejaegher@barco.com, Web: www.barco.com

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Date: _____

Please correct the following points in this documentation (**R5976766/00**):

page	wrong	correct